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LESSONS ON FIRE PREVENTION

FOR USE IN PUBLIC SCHOOLS

PART TWO

By MISS MAMIE MULDOON
Secretary of Nebraska State Fire Commission

1913

APPROVED AND ISSUED BY
W. S. RIDGELL, Deputy State Fire Commissioner

Jan. 2, 1919

Harvard University
Bureau for Research
in
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PREFACE

It can easily be proven that over one-half the enormous annual fire losses of the United States are due to carelessness and neglect and therefore can be avoided. Because this is true, legislators who have studied the situation have enacted laws in their different states for the purpose of reducing this terrific destruction of life and property by fire. Nearly two-thirds of the states of the Union have now passed laws providing that the subject of fire prevention shall be taught in their schools. The subject is a most commendable and interesting one and the necessity of a text-book covering every phase of the subject has long been felt.

I am placing this book in the schools trusting it will be conducive of great good and firmly believing that if the rules and instructions are applied the next generation will not witness the extravagant fire losses in this country that the past generation has experienced.

It has been my purpose to cover the subject of fire prevention most thoroughly. If repetitions of the same cautions and advice have been frequently made it has been done intentionally with a view of impressing that particular danger or precaution upon the mind of the student.

As the principle of fire prevention and the business of fire insurance are so closely allied several lessons have been written for the higher grades explaining fire insurance. A great deal of time and thought has been spent on each lesson and the explanations and instructions have been written in language thought most suitable for the different grades.

It is my earnest desire that this book will meet with the approval of educators throughout the country and that the Conservation of Life and Property from destruction by fire will appeal to every student as a branch of study worthy of their most earnest consideration.

MAMIE MULDOON.

Since the State Fire Marshal Law was enacted in 1909, the fire losses of Nebraska have gradually decreased. Fire marshal laws are now in effect in twenty-nine states of the Union and Fire Prevention Societies have not only been organized in the twenty-nine states but in a number of the larger cities of the country and they are doing effective work in reducing the fire waste in their respective localities.

This book compiled by Miss Muldoon, Secretary of the State Fire Commission Department, is for the purpose of teaching, not only the school children but every citizen of the state of their individual responsibility in reducing the fire losses of Nebraska.

While the annual fire losses of the United States are about $2.50 per capita, the fire losses in European countries are only about $0.30 per capita. Probably the difference in fire losses between this country and Europe is due to the fact that European countries have more stringent laws than we have, but American citizenship should voluntarily organize in their respective communities for the purpose of reducing the great, unnecessary and preventable fire waste that we are annually paying.

I would suggest that the school children of the state organize Fire Prevention Societies as outlined in this book, elect their own officers and communicate with the Fire Marshal's office at Lincoln, Nebraska.

Miss Muldoon, who has been connected, as Secretary, with the Fire Commissioner's office for over four years, has spent much time in compiling this book and I believe it covers the subject more thoroughly than any other book on fire prevention that has ever been published.

If the teachers of the State of Nebraska would take an interest in teaching this important subject to their pupils they would find at the end of the school year that the fire waste would be materially decreased in their respective cities and towns.

Very truly yours,

W. S. RIDGELL,

Chief Deputy Fire Commissioner.

INTRODUCTION

To School Boards and Teachers of Nebraska:

At the thirty-second session of the Legislature of Nebraska a law was enacted establishing a "Fire Day," and provisions were made for its observance. The Chief Deputy Fire Commissioner has approved this book of instruction on the subject of "Fire Dangers," compiled by Miss Mamie Muldoon.

The loss of life and property has been so great the past few years that many states have made laws regulating the use of inflammable substances which tend to lessen the disasters caused by fire. Nebraska has awakened to the fact that to reach the highest efficiency in any undertaking the children of the state must be aroused to see the need of the movement contemplated.

The law requires that thirty minutes be devoted to the subject of fire dangers each month. The plan of this text-book is such that every school may be teaching a similar subject at the same time, thus making a uniform crusade against "Fire Dangers."

The "State Fire Day" as fixed by law is the first Friday in November, and there shall be appropriate exercises for the day on the subject. Fire drills are recommended as a part of the special day program.

We suggest that the program be arranged to arouse an interest in the law and in its enforcement. Each teacher should select appropriate songs and recitations suitable for the day. Have compositions written on some of the fire dangers.

Teachers should have pupils clip from papers all notices about fires and classify them according to the different lectures in the text-book. A report should be made on the clippings for the information of pupils and parents.

We trust school boards, teachers, parents, and pupils will so interest themselves in the study of "Fire Dangers" and in the "Special Fire Day" program that excellent reports may be made on the results of the combined efforts to lessen fire disasters.

JAMES E. DELZELL,
State Superintendent of Public Instruction.

HIGH SCHOOL

If you would be a friend in need,
Assist now by your word and deed

To stay the demon fire in its flight,
For ours is a cause most just and right.

We are trying in this book by story and song
To wage our war against fire along.

We burn up homes and buildings grand
By matches placed in children's hands,

And careless fires from matches in the hands of people grown
If they could be brought together would make the nation mourn.

Matches left around for rats and mice to take
Some of our great fires and conflagrations make.

We destroy property of value untold
By defective flues and chimney holes.

We lose every year an irrecoverable loss
Because hot ashes against buildings we toss.

By the careless use of gasoline and oil
We wealth, property, and lives despoil.

By burning trash and with bonfires, too,
We burn up homes and buildings not a few.

By lamps, both oil and gasoline
Blocks are laid in ruins by the bad fire fiend.

Gasoline stoves and oil ones as well
Burn up homes and people too numerous to tell.

Gasoline, when used for cleaning clothes
Is one of our most dangerous and deadly foes.

Stoves overheated or too close to the wall
Burn up untold wealth beyond recall.

While stoves erected with no protection underneath
Set fire to the floor by excessive heat.

The gas jet open on which can blow a curtain
Is the cause of many fires, this fact is certain.

Bad electric wiring, improper installing
Cause money losses most appalling.

Carelessly thrown stubs of cigarettes and cigars
Our neighbor's property burns and mars.

Old rubbish we keep, until fired by spontaneous combustion
Making a blaze that rivals a Vesuvius eruption.

Sparks from trains and engines thrown
Are the cause of a number of fires "unknown."

Holiday fires caused by Christmas trees
Would not occur, if we'd careful be.

On July Fourth, we kill and desecrate
When we should in a safe way celebrate.

Our careless fire loss every year
Should fill us every one with fear

We burn up buildings, homes and towns,
We burn up property and lives in bounds.

Our fire losses each year amount to more
Than we collect in tariff, mines, and ores.

Our reckless, careless, unnecessary waste
By fire each year, and our terrific haste

Horrify our brother across the ocean,
But do not cause us the least emotion.

We hear a great deal about conservation
And the subject has caused much consternation,

As the truths come home in a manner strong
How our forests and minerals are used up wrong

How all our natural resources dear
We abuse and use without thought or fear.

We should protect our forests that God has made
Nor burn them down in a careless raid.

For what God has given to man could not be wrought
But comes to us unasked, unsought.

Man's muscle and bone, his brain and brawn,
Working and toiling from dawn to dawn,

His labor, the sweat of his brow
Built our cities, and stores, our homes and plows.

Then let us preserve what man's labor erected
And not let it burn through duty neglected.

Now we hope all will join with us and say,
"We will begin and from this very day

Be willing the best that is in us to give
To follow our motto Build and Let Live."

HIGH SCHOOL—NINTH AND TENTH GRADES

LESSON 1.

"Our National Folly."

One of the greatest progressive movements along the lines of conservation is the conservation of life and property against fire. We hear so much about the conservation of our natural resources; our forests, minerals, etc. If it is well to conserve our forests, munificent gifts of the Almighty for the benefit and comfort of mankind; has it not occurred to you that it is a duty we owe God and man to conserve that which man has built by his genius, his brains, and the sweat of his brow?

If the people of this state and this country could be brought to realize the enormous and unnecessary fire loss that this nation suffers every year, every day, and every hour they would look aghast at the figures, and be frightened as the knowledge of it dawned upon them. The stupendous fire waste suffered in this country each year has been justly termed "**Our National Folly.**" The annual per capita fire waste in the United States is estimated at $2.51 and in Europe at only 33 cents. Unfortunately no sense of the criminality and immorality of needless fire waste has yet moved us. In France there is a law which dates from the time of Napoleon and provides that if a fire starts in your house or property and damages the property of your neighbor, you are liable to the owner thereof or vice versa. In other European countries a tremendous liability rests on the party on whose premises the fire starts. In our country the fire is fought bravely by our fire departments, regular and volunteer, the ashes are viewed when it is over, the insurance companies pay the policies, and all is over. If your neighbor adjoining you, whose property caught fire from yours, has no insurance, if his savings, be they great or small, are wiped away, we say "It is too bad, but he ought to carry insurance," and he, too, is forgotten. The dead charred bodies that perhaps were caught in the flames are taken out and buried and the whole catastrophe is looked upon as a horrible, unavoidable affair. **Was it unavoidable?** Or did it not happen from **carelessness? A carelessly thrown match; carelessly used gasoline,** in filling stove, cleaning clothes, storing the gasoline, etc., **carelessness in the use of kerosene,** lighting a fire, upsetting a lamp, etc., **defective flues; stovepipes running through roofs or wooden partitions; paper, instead of a metal cap, put over an unused chimney hole; lace curtains blowing against an open gas jet; children allowed to play with matches or bonfires; stoves set on the floor without being protected with a zinc or metal piece; stoves placed too close to an unprotected wall; carelessly thrown cigar or cigarette stubs; bonfires close to buildings; old waste and rubbish allowed to accumulate around cellar ways or in corners of halls or rooms in public buildings or private dwellings.** These are only a very few of the causes of **careless fires.** The declaration of experts that over fifty per cent of the present fire waste of this country is from easily preventable causes indicates that the entire nation might well be taught lessons in individual responsibility. Correction of careless habits is certainly possible in both grown people and children. This state intends to carry on a vigorous campaign along the lines of "**fire prevention**" and will attempt to educate young and old in this new subject of conservation. If we were to lose the amount of money each year in wheat, cotton, beef or sugar that we lose in unnecessary fire losses, or if business failures should aggregate that figure, every citizen of this country would be wringing his hands and shaking his head and demanding that somehow, some way, such a loss must be prevented. Our campaign will be an attempt to stop this tremendous unnecessary waste. The average annual fire loss in the United States is $252,000,000. We burn up $500 worth of property every minute, day and night, as shown by government statistics.

We have a fire problem on our hands. We need the cooperation of every boy and girl in school in this state.

Can we have it? Will each pupil help us? Start a Fire Prevention Club in your school. Be scrupulously careful of fire dangers around your home and school. Cultivate the habit now and when you are men and women out in the world in business or home life you will intuitively use every precaution to avoid fires.

QUESTIONS.

What is one of the greatest conservation subjects today? Is it as important to conserve our manufactured resources as it is our natural resources? If the people of the country could be brought to realize the enormous fire waste, would they be shocked? What is the annual per capita fire loss in the United States? What is it in Europe? What law in France helps reduce the fire loss there? Why is the fire loss in Europe generally less than ours? What are some frequent causes of careless fires? Is a great deal of our fire waste unnecessary? What is the purpose of teaching fire-prevention in the schools? What is the average annual fire loss of the United States? How much property do we burn up every minute? Can school children help to reduce the fire loss? How?

(Note—This lesson entitled "National Folly" was issued as a bulletin from the Nebraska Fire Commission Department in 1911, but as the author of this book was also author of "National Folly," she has used it in this book as a lesson, as she had opportunity to know the great good it did in Nebraska among the citizens at the time it was issued as a bulletin, and hopes it will do a like good among the scholars of the state.)

LESSON 2.

Fireproof Clothing.

As far back as the 16th century different attempts were made to make wearing apparel fireproof. While it was discovered how to render material fireproof the objection was that in washing the cloth the fireproof substance was washed out, leaving the goods little better than they were before treating them with the process. For many years this difficulty was not overcome.

"Considerable attention has been given in Europe to the fireproofing of fabrics, with a fair degree of success. The mere dipping of cloth in a strong alum solution will make it fire-resisting for a considerable period, but after repeated washing the effect disappears."

However, within the past few years a very good method has been found which renders flannelette, cotton, and in fact most any washable material permanently fireproof.

William Henry Perkin of Manchester, England, describes the process in this way:

"The flannelette (or other material) is run through a solution of sodium stannate, having a density of approximately forty-five degrees Tw. in such a manner that it becomes thoroughly impregnated. It is then squeezed to remove the excess of the solution, passed over heated copper drums in order to thoroughly dry it, after which it is run through a solution of ammonium sulphate having a density of about fifteen degrees Tw. and again squeezed and dried.

"Apart from the precipitated stannic oxide, the material now contains sodium sulphate, and this is removed by passage through water; the material is then dried and subjected to the ordinary processes of finishing. A long series of trials, carried out under the most stringent conditions, have conclusively proved that material subjected to this process is permanently fireproofed. No amount of washing with hot water and soap will remove the fireproofing agent; or in other words, the property of resisting flame lasts as long as the material itself lasts. This extraordinary property of resisting soap and water seems to me to indicate that the oxide of tin is not present merely as an insoluble precipitate in the cloth, but must have entered into some actual combination with the fibre, yielding a compound which is not broken down by the action of the weak alkali of the soap. But a matter of hardly less importance from the practical point of view is that the material is not only permanently fireproofed by the process I have just described, but it also retains and acquires properties which make it as perfect a material in all other respects as could be desired. In the first place the treatment has no effect on the delicate colors which are now so generally employed in connection with the manufacture of flannelette and other cotton goods, and very careful experiments have demonstrated the fact that the insoluble tin compound in the fibre has not the slightest deleterious action on the most delicate skin. In addition, the presence of the tin compound in the pores gives the cloth a softer and fuller feel than that of the original flannelette, and what perhaps is the most unexpected result is the fact that the material is considerably strengthened by the process.

"A series of tests made by the Manchester Chamber of Commerce proved that the tensile strength of flannelette is increased nearly twenty per cent as the result of the introduction of the tin compound into the fibre.

"Further and very exhaustive tests made at the Municipal School of Technology, Manchester, on a machine specially designed for testing the wearing properties of fabrics showed an even greater gain in durability in the case of the fireproofed flannelette. These separate and independent tests conclusively showed that the increase in strength and durability was approximately equal to the cost of the fireproofing treatment, so that garments made from the permanently fireproofed flannelette are as a matter of fact no dearer than those made from ordinary flannelette and are at the same time as safe as if made from flannel.

"This permanently fireproofed flannelette is now manufactured under the name of 'Non-Flam,' and although its introduction has been slow, it is being increasingly used and will, in all probability, ultimately entirely replace the ordinary inflammable variety. One of the difficulties experienced in connection with its general introduction is the fact that, owing to the high price of tin, which is now quoted at about $1,050 per ton, the cost of the process is not inconsiderable, but, even with tin at this high price, the extra cost is not more than two cents per yard or about three to four cents for a child's garment.

"It is hardly necessary for me to say that this process can be applied to any cotton fabric and is especially valuable in connection with muslin, because this material is so often used, especially on the stage, for dresses which, on account of their flimsy nature, are naturally highly inflammable. Another direction in which the process may be used with great advantage is in connection with lace curtains. Many disastrous fires have occurred by reason of the ignition of lace curtains ,and there can be no doubt that the greater majority of these would have been avoided if the curtains had been treated by the 'Non-Flam' process.

"It seems to me that it is obvious that if this process, or some other process capable of giving the same protection from fire, were adopted in the case of all inflammable cotton goods, and especially in the case of material used for garments, many disastrous fires and the appalling loss of life, especially among young children, might be avoided."

If mothers would make children's dresses, their own house dresses, curtains, portieres, etc., fireproof it would be a great factor in reducing the fire losses of the country.

People could render their homes, barns, and outhouses fireproof, in a great measure, by painting or whitewashing them, using zinc chloride mixed in the paint or whitewash.

"Zinc chloride has great affinity for, and, therefore, attaches itself readily to woody fibre, and fibres of all kinds and materials saturated with a solution of this salt and then dried are practically non-flammable. This salt has also this valuable property that it is a powerful antiseptic and therefore very suitable for fireproofing the wood used in the construction of hospitals, homes, and public buildings."

Tell your parents about this lesson.

QUESTIONS.

What does "fireproof" mean? When did people first attempt to make cotton cloth fireproof? Which will take fire and burn most readily, cotton or wool cloth? What was the greatest difficulty met with in making cloth fireproof? Has this difficulty been overcome? Tell just how clothing may be made fireproof. If housewives would make clothing and furnishings in their homes fireproof, would it tend to lessen the loss of life from fire? How can buildings be made fireproof in a great degree? What should be used in the paint for your home? Why?

LESSON 3.

Electricity and Gas.

"Protect all woodwork above or beside a gas jet (within two and one-half feet) with a sheet of asbestos board and tin.

"Use rigid gas fixtures, if possible.

"If a swinging gas bracket is necessary, always use a globe so that flame may not come in contact with combustible substances. Swinging gas jets are particularly dangerous in pantries.

"If you smell gas, open the doors and windows first—then look for the leak; but never use a lamp, candle, or lighted match to find it. If not found at once, send for the plumber.

"Leaks in gas pipes can be temporarily stopped with soap.

"Never take a lamp, candle, or lighted match into a cellar where there is any smell of gas.

"Flexible or rubber tube connections are exceedingly dangerous. Avoid their use, if possible. Where flexible connections are absolutely necessary, **be sure to turn off the gas where tube joins the gas pipe, as well as at the burner.**"

There are so many new electrical devices now that naturally the fire hazard is increased from this source. Electric irons left standing on ironing boards and tables, the user forgetting to shut off the current, have burned many houses. The electric toaster, curling iron, and all other devices must be carefully watched.

"Don't overload your electric light system, or let it grow too old before revision.

"Insist that all work be put in according to the requirements of the

'National Code.' (Copy on request from National Fire Protection Association.)

"Have adequate spark arresters around all open arc lights.

"Never allow incandescent electric lights to rest against combustible material. Avoid long, flexible cords, and never shorten or otherwise adjust cords by looping over nails or metal parts of machines."

Tell your parents to insist upon having your home wired according to the rules and requirements of the "National Electrical Code." Electricity is the safest way of lighting a home if the system is installed correctly and repaired when needed.

QUESTIONS.

How should woodwork be protected when close to gas jets? Should swinging gas jets be used? Why not? What kind of gas fixtures should be used? What should you do if you smell gas in your home? Are lighted lamps, candles, or matches dangerous in a room where gas is escaping? If you have a gas plate connected to a gas jet by a tube, where should the gas be turned off? Should electric light systems be watched carefully? Is it dangerous to wrap electric light cords over nails, hooks, or any metal? According to what rules should your house be wired for electricity? Where should the gas be turned off from a gas jet? Are electric irons, curling irons, toasters, and other electric devices dangerous?

LESSON 4.

Lightning.

Lightning is a result of atmospheric electricity.

We might call it energy released.

Lightning has been the wonder and the terror of the ages. In ancient mythology, Jove, monarch of high Olympus, was keeper of the thunderbolts. Julius Caesar, unquestioned master of the Roman cohorts, trembled at lightning. Rational man and dumb alimals alike are terrorized by the lightning flash.

Lightning is caused by the disruptive discharge when the positive electricity in the clouds rushes to meet the negative electricity in the earth. Rods installed on a building aid one of nature's laws which govern electrical action or energy. They act as a path over which the negative electricity of the house is attracted by the positive electricity of the clouds in the atmosphere, preventing an accumulation of electricity in the building which draws the lightning stroke. If there is not a good conductor the two volumes will rush together with such force as to cause an explosion or lightning stroke. Lightning rods prevent the positive electricity in the storm clouds from reaching a building, as the rods should give off the negative electricity in the building as rapidly as it is attracted, thereby preventing the building from being struck by lightning.

The necessity of lightning rods on our buildings is easily seen when you consider the terrible ravages of lightning. Lightning claims a death toll of hundreds of people every year; thousands more are injured, many crippled for life, and millions of dollars' worth of property is destroyed. The calamities caused by lightning are so numerous they can hardly be estimated.

You should do everything possible to keep yourself and property safe from lightning.

Discussing the barn hazard, Fire Alarm says:

"The fire loss from burning barns has of late years increased much more rapidly than that in any other class of buildings. Within ten years the value of the building materials has increased by half. This is true of all buildings. The increased risk in barns depends upon the greater value of farm products stored in them, also to the fact that the farmer now uses so many machines to help do his work where years ago it was all done by hand. These machines, and often an automobile. too, are stored in the barn and are ruined. A barn fire rarely leaves anything but the foundation. It is likely to be a total loss because of the character of its contents and because there is no one present with a water bucket and no fire department within call.

"Ten years ago the average barn burned was worth more than its contents. Late years reports from several states showed the contents to have a value one and one-half times that of the building.

"The sweating of newly-mown hay is an important cause of this loss, because it is liable to take fire spontaneously, and it draws lightning. The scientific facts in regard to the heating and sweating of cut grass in a mow are interesting. The cells in the grass continue to live and breathe for some time after it is cut, and they alone, in a close mow, heat the hay in the center to a temperature of 132 F. Added to this is the heat from the microscopic spores of fungi which continue to grow on the blades during the time it is undergoing fermentation, the heat created by the development of the hay seeds, which goes on for a time, and the heat of the sun upon the roof. These causes acting together may heat hay that is well packed in a mow, without ventilation to make a current of air to carry off the heat, to a temperature of 212 F. —that at which water boils. Then the hay begins to char; the charcoal so formed absorbs oxygen and that makes the mass still hotter. If the heat reaches 265 F. the mass blazes. Barn fires from heating hay often are reported, "Cause unknown, the whole barn seemed ablaze at once."

The probability of a barn being struck by lightning is greatly increased by hay sweating within it. Water is a good conductor of electricity. Moisture in the air lessens the resistance of the air to electricity. The moisture from sweating hay rises rapidly and continuously, because the air containing it is heated more rapidly than the moisture from fields, which rises and forms the clouds. So, over the barn is a shaft of moistened air reaching up to the hovering thundercloud. "An empty barn or silo is not near so liable to be struck by lighting as a barn or building filled with hay or grain."

Wet horses or cattle, on account of the steam arising from them, make a weak place for the electricity from the clouds to break through the air and strike them, hence why so many horses and cattle are struck by lightning and killed.

Lightning destroys more lives and property in the country than it does in large cities, because in cities water pipes, gas pipes, electric wires and metal on buildings make it easier for electricity to pass through them. Therefore it is much more essential that lightning rods be used on buildings in the country than in large cities.

The United States Department of Agriculture in its Bulletin No. 37 issued in 1906, gives the following rules for the erection of lightning rods:

RULES FOR THE ERECTION.

By the Lightning Research Committee of 1905.

Points—It is not necessary to incur the expense of platinizing, gilding, or electro-plating. It is desirable to have three or more points; these points must not be attached by screwing alone, and the rod should be solid and not tubular.

Upper Terminals—The number of points to be specified will depend upon the size of the building, the material of which it is constructed, and the comparative height of the several parts. No general rule can be given for this, but the architect must be guided by the directions given.

Insulators—The rod is not to be kept from the building by glass or other insulators, but attached to it by metal fastenings. This regulation stands.

Fixing—Rods should preferentially be taken down the side of the building most exposed to the rain. They should be held firmly, but the holdfast should not be driven in so tightly as to pinch the rod or prevent the contraction and expansion produced by different changes of the temperature.

Material for Rod—Copper, weighing not less than six ounces per foot run, and the conductivity of which is not less than 90 per cent that of pure copper, either in the form of tape, or rope of stout wires. Iron may be used, but should weigh not less than 2¼ pounds per foot run.

Joints—Although electricity of high tension will jump across bad joints, they diminish the efficacy of the conductor; therefore every joint, besides being well cleaned, screwed, scarfed, or riveted, should be thoroughly soldered.

Joints in a series of conductors should be as few as possible. Main conductors themselves should always be continuous and without artificial joints. Visible continuity suffices for the remainder of the circuit. The electrical testing of the whole circuit is difficult and needless.

Painting—Iron rods, whether galvanized or not, should be painted; copper ones may be painted or not.

Extensive Masses of Metal—As far as practicable it is desired that the conductor be connected to extensive masses of metal, such as hot-water pipes, etc., both internal and external.

Earth Connections—It is essential that the lower extremity of the conductor be buried in permanently damp soil; hence proximity to rain-water pipes and to drains is desirable. The use of coke or cinders appears to be questionable, owing to the chemical or electrolytic effect on copper or iron.

Suggestions of the Committee.

1. Two main rods, one on each side, should be provided, extending from the top of each tower, spire, or high chimney stack, by the most direct path to earth.

2. Horizontal conductors should connect all vertical conductors along the ridge, or any other suitable position on the roof.

3. The upper horizontal conductor should be fitted with aigrettes or points at intervals of twenty or thirty feet.

4. Short vertical rods should be erected along minor pinnacles and connected with the upper horizontal conductor.

5. All roof metals, such as finials, ridging, rain-water, and ventilating pipes, metal cowls, lead finishings, gutters, etc., should be connected to the horizontal conductors.

6. All large masses of metal in the building should be connected to earth either directly or by means of the lower horizontal conductor.

7. Where roofs are partly or wholly metal lined, they should be connected to the earth by vertical rods.

About the only way we can prevent property loss from lightning (as we have no control over the elements) is to take every precaution and have our homes and buildings equipped with a good lightning rod. Every home should be provided with a good approved fire-extinguisher, so that if it should be struck by lightning the fire could be put out in its incipiency.

QUESTIONS.

What is lightning? Have people always been afraid of lightning? Are dumb animals fearful of it? What causes lightning? Of what benefit are lightning rods? Are many people injured and killed yearly by lightning? Is farm property or property in the country more likely to be struck by lightning than property in large cities? Why? What rules does the United States Department of Agriculture give for the erection of lightning rods?

LESSON 5.

Forest and Prairie Fires.

Millions of dollars' worth of lumber in the form of growing trees in the forest has been destroyed in this country by fire. Every fire has been a heedless, if not a careless, one. Thirty years ago it seemed as though the lumber supply to be obtained from forests in the United States would supply this nation for centuries to come. Because many thousands of trees have been burned to ashes at one sweep by a raging forest fire, this country is even now importing lumber from Canada and other countries. Minnesota thirty years ago was rich in her timber possessions, but owing to the widespread forest fires of this state, Minnesota is today sending to the Pacific coast for lumber. Oregon, Washington, California, and other states rich with timber are suffering every year losses amounting to millions of dollars by reason of forest fires.

These fires, started by campers using fire carelessly and negligently, by pleasure-seekers, hunters, fishermen, etc., carelessly throwing down matches or lighted cigars and cigarette stubs, and by sparks flying from passing locomotives, are impoverishing our country, which a few years ago was so rich in its timber possessions. This impoverishing of our nation adds to the high cost of living in a direct way. It adds to the cost of our homes and of every article of furniture we use in our homes; in fact it adds to the cost of the furnishing of every home or business house.

The United States government, becoming alarmed at this great annual fire waste of our forests, has employed men whose duty it is to patrol the forests night and day, so that they may be able to detect a fire as soon as it starts and thereby possibly prevent a forest conflagration. It is a criminal misdemeanor to smoke or handle fire of any kind in our national forest preserves.

"The year 1910 will long be remembered for the enormous fire losses in the forests of the United States. The early summer was characterized by an exceptional drought, particularly in the northwestern portion of the country. The losses due to forest fires had already amounted to $100,000,000, when in August a series of conflagrations broke out in Montana, Idaho, Oregon, and Washington, and before they were extinguished an amount of timber almost equal to the entire cut of the whole country for two years had been destroyed. These fires are believed to have caused the destruction of timber valued at $175,000,000, and the cost of fighting them is estimated at over $1,500,000. In addition to the financial losses, seventy-six persons were killed and Wallace, Idaho, and several smaller towns were almost entirely destroyed. To meet the urgency of the situation every available source was drawn upon, and the United States Forest Service employed over 2,000 men and sixteen companies of troops were detailed for work in the national forests and the Indian reservations. In addition, railroads, lumber companies, and private individuals aided in checking the spread of the fires, which were finally extinguished by timely rains and snow in the mountains. The lessons of these fires is the inadequacy of the present means for fire control over such large areas.

"The cooperation plan entered into by the United States Forest Service and various state authorities for the control of forest fires has worked out very successfully, and the country has been spared the heavy loss of life and property that characterized 1910. The lumber manufacturers of Montana, Idaho, Oregon, Washington, and California are also cooperating in preserving the forests from fire. Only about 76,000,000 feet of standing timber is reported as destroyed by fire in the northwest during 1912. Extensive forest fires swept parts of the Yukon valley, Alaska, early in the summer, destroying much timber. On the Colorado plateau considerable loss is reported. Investigations by the forest service seem to indicate that lightning plays a much greater part in causing forest fires than had hitherto been believed. By recent legislation, the railroads in western Canada are held responsible for fires starting within 300 yards of their right of way, and must assume costs and damages for losses to a distance of ten miles, when fires spread from their lands. In British Columbia, every owner of forest land is obliged to pay 1½ cents per acre and 2½ cents per thousand feet of timber, and the crown lands contribute 2 cents per acre, to a fund which the government supplements by like amounts to be used for fire protection."

If any of you children live near great forests you can become "National Fire Prevention Guards" by using every care and precaution yourself and impressing it on the minds of any person whom you detect handling fire or matches in a careless way near these forests that they must not in any way endanger our valuable timber by carelessness.

Prairie Fires.

Prairie fires do much damage every year during the summer and fall, when the grass becomes very dry and a tiny spark from a locomotive, bonfire, or lighted match or cigar will set the grass on fire, and it burns with such rapidity that it is impossible for any one to control it. Very often prairie fires start by some one burning grass, thinking they will burn only a certain amount. When any one starts a fire to burn grass in a dry season, they should always dig or plow the ground for a space of ten or twenty feet along where they mean the fire should stop.

About the only way to stop a prairie fire is for men to get ahead of the fire and plow the ground for a space of fifteen or twenty feet in width so that the fire, having nothing to feed on, will have to stop.

Great care should be manifested always around dry prairies, forests, and even parks and roads in cities during the seasons when the grass is very dry, because a lighted match, carelessly dropped, a lighted cigar stub, or a tiny spark is very liable to cause a disastrous fire.

QUESTIONS.

Do forest fires destroy many trees? Have forest fires damaged our forests and therefore our supply of lumber? What usually causes forest fires? What action has the United States government taken to prevent forest fires? About how much lumber was destroyed by forest fires during the year 1910? What plan has the United States Forest Service adopted to control and prevent these fires? How can children act as fire-preventive guards? Do prairie fires do much damage? What causes them? What is the best way to stop them?

LESSON 6.

How to Build and Care for Chimneys and Flues.

As over one-half of the careless fires that occur annually are caused by defective chimneys and flues, we think it is best to give a lesson on how to build them correctly and safely. This lesson may seem somewhat advanced for students in school, but they can get an idea of at least the principle and of the most important requirements for the safe construction of chimneys and flues. Moreover, students who are about to leave school to take up their duties in the outside world can note these very important specifications, and when they have jurisdiction over any building they will be better able to know whether a chimney is safe or not. Students can call their parents' attention to defects which they may find, and in this manner be instrumental in preventing fires from this most prevalent of all causes.

J. N. Brown of St. Louis has published instructions as follows:

"It is estimated the annual fire loss caused by defective chimneys is over $40,000,000.

"The terrible waste caused by fire which is costing the people of the United States over two hundred millions of dollars every year should be checked.

"The fire waste is costing the people of this country about $3 for each man, woman, and child, while in Europe it is only 30 cents per capita. No country except America could withstand such a drain, and we should not.

"Berlin, Germany, and Chicago, Illinois, each contain about 2,000,000 inhabitants. The annual fire waste in Berlin is $175,000, the cost of its fire department $300,000. Chicago was charged with fire waste of $5,000,000 and paid $3,000,000 for its fire department in 1909.

"Out of a total of 2464 losses in one state, 524 were caused by defective flues, 304 additional came from causes probably of similar nature, while defective heating, lighting, and cooking apparatus brought the total to 46½ per cent of all losses—a fearful record of carelessness, and 90 per cent of the amount could be saved if property owners would properly construct their buildings, especially the chimneys and flues.

"The best builders in the country were consulted, and much care used in formulating these instructions, and much time spent in studying the causes of fires from defective heating and cooking apparatus and remedies to offset so much waste, and if these suggestions are followed out in building and repairing chimneys and flues, they will very materially reduce the fire waste.

"The people who build their flues on posts, brackets, or iron stirrups in order to save a few dollars are not only endangering their own but their neighbors' property."

How to Build and Repair Chimneys and Flues.

All soft or bituminous coal contains a large amount of sulphur, sometimes it can be seen in seams or veins from an eighth to a half inch in thickness, which, in burning, we find, by an accurate chemical analysis, becomes $S O_2$ sulphur dioxide (one part sulphur and two parts oxygen), a colorless gas of sulphur match odor; this, with water, which is always found in chimney gases, will form an acid $H_2 S O_2$ (sulphurous acid). Often it may be oxidized into $H_2 S O_4$ (sulphuric acid), which is very injurious to lime mortar (largely carbonate) such as is generally used in building chimneys. The sulphur dioxide is generated by fire, and passes into the chimney through the smoke pipe, and gradually forms into sulphurous acid, then into sulphuric acid, as it reaches the top, where there is more oxygen in the atmosphere. The lime mortar rapidly disintegrates, and either falls or is washed out by rains from between the bricks, extending gradually from the top downward, soon reaching the roof, when fire ensues. To obviate this, chimneys should be built as follows:

FRAME BUILDINGS—Chimneys for FURNACES, whether for hot air, water, or steam heating, should be built from the GROUND OR BASEMENT WALLS UP THROUGH THE BUILDING TO A POINT AT LEAST THREE FEET ABOVE THE HIGHEST PART OF SAME.

The foundation should be twice the area of the chimney, of brick or stone laid in cement mortar made with one part cement and three parts good, sharp river sand, beginning in the ground below frost line up to the first floor, thence with brick laid in lime or fire clay mortar, the walls being at least eight inches thick, the inside being lined with a fire clay lining (sleeve jointed) made for the purpose, which shall reach the entire length of the chimney or flue, with openings at proper places for smoke pipe to enter. It should be built several weeks and allowed to become thoroughly settled before any woodwork is put around it, especially if it is located in or near the center of the building, thus avoiding any cracking of plaster or chimney walls. Insist on chimney linings being made of fire clay which contains at least 40 per cent of silica.

Fire underwriters inaugurated improved methods of construction, and, realizing that the highest grade of chimney construction could not be immediately induced, countenanced lining chimneys with sewer pipe or terra cotta.

As a matter of fact, competent engineers have demonstrated that sewer pipe cracks under intense heat, and terra cotta will not withstand sulphurous acid or intense heat, and terra cotta, as well as sewer pipe, is seriously affected by temperature changes, hence to secure the highest efficiency, chimneys should be lined with fire clay brick or fire clay tiling, which are especially constructed to withstand heat, sulphurous acid and changes in temperature.

There is every reason why fire clay brick or fire clay tiling should be used in preference to terra cotta or sewer pipe, as they cost less and are more efficient.

Lime should be slacked at least thirty days before using.

All joints and cracks around lining should be "slushed" with good lime or fire clay mortar, making solid stack from ground to top of chimney or flue. It should be topped out with cement, so brick will not fall apart. Fire clay mortar should be used around where smoke pipe enters.

Where chimneys or flues are built partly or wholly outside the building, great care should be taken in protecting the woodwork where it joins the same, with a thick sheet of asbestos, and where floors and baseboards come in contact with chimney or flue, securely fasten a sheet of asbestos paper between woodwork and wall. IN NO EVENT SHOULD ANY WOODWORK BE BUILT INTO THE FLUE OR CHIMNEY. If chimney or flue rises five feet or more above roof of building, it should be braced with iron rods fastened to the roof in three directions, to prevent its being blown over in case of storms. Chimneys or flues intended for grates, or grates and stoves combined, should be constructed in same manner. Chimneys or flues intended for stoves or ranges should be built in same way, except that walls may be only four inches thick. Foundation for chimney should be wide enough for hearth on first floor, and box for hearth on upper floors should be AT LEAST EIGHT INCHES DEEP, lined with metal, and at least six inches of dry clay or sand for hearth to rest on. No wood to be built into hearth or under grate or fireplace. All chimneys to be lined with fire clay tiling.

BRICK BUILDINGS.—Chimneys or flues built in the walls of a brick building should have fire clay lining (not sleeve jointed) throughout, using same precautions in every respect as in case of frame buildings. IN NO EVENT SHOULD A SMOKE PIPE PASS THROUGH A FLOOR, ROOF, OR OUT OF WINDOW OF ANY BUILDING OR OUTBUILDING ON THE PREMISES, BUT SHOULD ENTER A BRICK CHIMNEY OR FLUE HORIZONTALLY, AND UNUSED STOVEPIPE HOLES SHOULD ALWAYS HAVE METAL STOPPERS.

NO CHIMNEY SHOULD BE BUILT ON JOISTS, POSTS, OR BRACKETS, BUT DOWN IN THE GROUND OR ON SOLID BASEMENT WALL. All pipes for conveying hot air, steam, or water through the building should be covered with asbestos paper (pasted on), and at least two inches from any woodwork.

Always protect the floor under stoves and lamps, and if any wood is within 18 inches overhead or at sides of any heating or cooking apparatus, it should have metal protection. Stovepipes should enter chimneys horizontally and never go through a floor or partition. A sheet of asbestos paper laid on floor first, then a sheet of zinc laid over it, makes the best protection we know of. All stovepipes should be securely tied with wire, so the pipe can not fall.

SMOKE STACKS.—Mills and factories should build heavy brick, stone, or concrete stacks from ground to a point, say, ten feet above peak of roof, lining same with fire clay brick laid in fire clay mortar, where breeching enters. Breeching should enter stack at least four feet below roof of boiler house. If only brick, stone, or concrete base is used, lined as above, it should rise at least five feet above roof of boiler house, and metal portion of stack should be well guyed, and painted with asphaltum every year.

National Board allows metal stack outside building on concrete base.

Never put metal stack or breeching through roof of boiler house.

All persons who are constructing new or remodeling old chimneys should build as near specifications as possible.

Fire clay linings for chimneys and rollers for door and window shutters can be procured from any dealer in building materials. SEE THAT LININGS ARE MADE OF FIRE CLAY, AND NOT SEWER PIPE, WHICH IS LIABLE TO CRACK UNDER CONSIDERABLE HEAT.

A mortar made of common yellow clay mixed with 5 to 10 per cent of Steatite, or any other variety of talc or soapstone, is equally as good as mortar made of fire clay.

Instructions for Repairing Old Chimneys.

In order to ascertain if chimneys need rebuilding, climb to the top and look down inside; if mortar has fallen out from between the bricks on the INSIDE, it will soon do so all the way through the wall. Take an ice pick or other sharp implement and try to push it through the mortar; if you can do so, rebuild at once, as follows:

Where soft coal is used, it is necessary to rebuild the chimney tops every few years. Tear it down below the roof, get fire clay tilling of the same size as the inside measurement of the chimney, set it in the top of the flue and build up with good hard brick laid in cement, consisting of TWO parts of sharp river sand and ONE part of GOOD PORTLAND cement. Mix and lay quickly before the cement hardens. This will make a solid brick, tile and cement chimney through the roof, where there is most danger, and is the best that can be done unless torn down to the ground and rebuilt, which is quite expensive and seldom necessary. Build the chimney up at least three feet above the peak of the roof.

Do not, under any circumstances "top off" a chimney with tiling or metal, as they are soon destroyed by the sulphurous acid in the coal smoke, and either fall or are blown off, frequently damaging the roof. Build it all the way up with brick, tiling lined, as indicated above.

If you have not had your chimneys inspected recently, DO SO AT ONCE. It may save your house. If using electricity, have an expert inspect your wiring and fixtures EVERY FIVE YEARS and KNOW that they are in good order.

All matches should be kept in an indestructible receptacle, out of the reach of children. Use only safety or double-dipped matches. Decline to sell or use a match that can be lighted by STRIKING ON THE SIDE OF THE HEAD—the head will fly off and set fire to objects some distance away. Use Safety Matches.

Remove all empty boxes, straw, loose paper, excelsior, greasy rags and waste, oily clothing and other trash out of your building EVERY NIGHT.

The prudent housewife should not put the rag saturated with linseed oil which she has used in polishing the furniture, in the closet for future use—IT WILL PROBABLY CAUSE A FIRE BEFORE THE NEXT MORNING.

Beware of material that is liable to cause spontaneous combustion. It causes numerous fires.

QUESTIONS.

About how much fire loss is caused each year by defective chimneys and flues? How much does the fire waste of the country cost each person every year? Do foreign countries have such an enormous loss? What is the difference between the fire losses of Berlin and Chicago? In one state how many fires were caused by defective flues in one year? Is it dangerous to build flues on posts or wooden brackets, etc.? What effect do coal smoke and soot have on chimneys? How should all chimneys be built? With what should every chimney be lined? Why? How should the woodwork be protected when chimneys are built outside the building, and where floor and baseboards come in contact with the chimney or flue? Should wood ever be built into the wall or chimney? If the chimney rises several feet above the roof, how should it be strengthened so as not to blow down? How should fireplaces be built? Should a smoke pipe ever pass through a floor, roof, window, or any opening other than a brick chimney or flue? How should unused stovepipe holes always be protected? Is it always dangerous to place a chimney on joists, posts or brackets? How should all furnace pipes be protected? How should the floor under stoves always be protected? How should stoves near walls or stovepipes running near ceilings be protected? What is the best protection to put under a stove? How should chimneys on mills and factories be built? How can you tell if your chimney needs relining or rebuilding? Does soft coal wear out a chimney quicker than hard coal? How should you proceed to repair old chimneys? How often should you have your chimneys inspected? How often should you have your electric wiring inspected? What kind of matches should you use and where should you keep them? How should you treat the waste and rubbish around your home? What care should be used with oily rags? Why? Are they dangerous? Does spontaneous combustion cause many fires?

LESSON 7.

Automatic Alarms.

A few years ago, the night watchman in factories, mercantile and public buildings was the only one to turn in fire-alarms for fires that occurred in buildings that were not occupied at night. It was left to him to detect any fire that might occur in premises under his supervision. Nearly every public building or private mercantile establishment and factory employs a night watchman. These watchmen are regulated in much the same way that the mechanical devices are. The portable watch clock, which the watchman sometimes carries records all his trips and movements through the building. Usually there is a time clock in the office or other part of the building which the watchman must ring each time he makes a trip during the night. The most common and most important report the watchman is required to make is the reporting to a telegraph station at certain hours. The watchman transmits signals according to a regular schedule of time and place. If his signals do not arrive at the proper time the telegraph company sends a messenger to find out why the watchman did not report as required. In case of any accident or negligence it is immediately discovered.

Most mercantile buildings and factories are now equipped with AUTOMATIC FIRE-ALARMS. Every home, church, school, and theatre should have them. The automatic fire-alarm is a device installed in a building which automatically gives the alarm of fire when the room reaches a certain temperature. The fire-alarm is set like a clock, but instead of the alarm ringing at the **TIME** for which it is set the fire-alarm rings when the **temperature** reaches the degree for which the alarm is set. The fire-alarm detector is usually set to ring at about 150 degrees Fahrenheit.

The alarm or detector can be installed in any room, cellar, attic or any place in a building. It is small and hardly noticeable. The wiring is installed in much the same manner as the telephone wires. When the temperature where the alarm is located reaches the degree of heat at which it is intended the alarm should go off, it rings all through the house or building, to the fire-engine house or to any place where it is wired. This is a great fire-saving invention. In buildings where no one stays at night it should be considered indispensable. Even where there is a night watchman this little detector often discovers the fire before the watchman does, and in homes where people are sleeping this little fire watchman is ever on guard to sound the alarm.

The theory of these devices is simple to explain. They are usually made of copper tubing of a very small size. The tubing runs along the walls or ceiling of the building, terminating in a box containing the machine. The copper tubing of course is filled with the same air the room contains. When air in the room becomes overheated the air in the tube is very hot; as it rises in temperature, this air expands and sets up a pressure on a particular part of the machine and sends in an alarm.

These devices can be installed at very little expense, and are invaluable in case of fire at night or when no one is around to discover it. They should be located in places where fires are most likely to start and should be tested regularly to see that they are in perfect working order. Some of these machines are so constructed that they will automatically give notice when they are out of order.

In the country these alarms can be installed in barns and outhouses, so that in case of fire the alarm will be given to the family in the house.

In hotels if a fire starts in a room every guest can be notified if the alarm is wired in each room, or if desired it need only be wired to the office or to the halls on each floor; in this way the fire can be immediately located and confined to the room in which it originated. In public buildings and hotels these automatic fire-alarms are a necessity; in the home they are a great safeguard.

QUESTIONS.

Who acted as "fire-alarms" at night in unoccupied buildings before automatic fire-alarms were invented? How did employers keep watch over the night watchman? What kind of buildings are now equipped with automatic fire-alarms? Are they a good thing in the home, church, school, and theatre? What is the automatic fire-alarm and how does it work? Is it a valuable machine? Are they very expensive? Why are they very valuable in the country? Why are they of such necessity in hotels? Is it well to have them in private homes?

LESSON 8.

Automatic Sprinklers.

The automatic sprinkler is a mechanical fire-extinguishing system which works on much the same principle as does the automatic fire-alarm. In fact, most all automatic sprinkler systems have automatic alarm attachments, so that when the sprinkler begins to work an alarm is sent in to the fire department or wherever desired.

Every mercantile storage and manufacturing building, especially in congested localities, should be equipped with automatic sprinklers. The first automatic sprinklers consisted of pipes like the water pipes in our homes, running through the walls and across the ceiling, where they came through the ceiling in the form of little heads. These heads were perforated like a common old-fashioned hand water sprinkler that our grandparents used for their gardens. Outside, there was a pump connected with these pipes, and in case of fire water could be pumped through these pipes, which would fall about the room from these little heads in the ceiling. The modern automatic sprinkler is so constructed that it automatically puts out a fire when no one is around to discover it. It is constructed on the same principle as were the old-fashioned ones, but now our public water mains supply the water pressure, and the little head of the sprinkler has a metal cap or cone over it and is sealed so under normal conditions no water can escape from it; but when the temperature near where it is reaches 160 degrees Fahrenheit this seal is automatically broken, and a stream of water flows out under pressure. The head is provided with a "splash plate" and the water thrown in large heavy drops in a sort of a circle, which covers an area of about 100 square feet. As many heads as are advisable or necessary can be installed in one room. By this simple device water is thrown where it is most needed, and at the most opportune time, at the very beginning of the fire. In fire fighting the most desirable thing is prompt action. If every fire could be discovered and fought promptly the losses would be insignificant. Perhaps, more than any one else, our firemen appreciate the benefits to be derived from the automatic sprinkler. Insurance companies, too, recognize the value of this alert fire-fighter and in every instance they are willing to lower the rates where automatic sprinklers are installed, and in numerous cases they will not take a risk at any rate if the building is not equipped with this fire-fighting device. They know the merit that lies in prompt action, and the automatic sprinkler is always ready to combat the blaze while assistance is coming. Of course, automatic devices, like humanity itself, have their faults and drawbacks. Sometimes they get out of order and do not work properly, but this is usually the fault of the owner as much as the sprinkler. The sprinkler can not test or repair itself, and the owner or supervisor in charge of a building should see that the automatic sprinkler system is always in perfect condition. We know of cases where, for some reason, the sprinkler operated when there was no fire at all and caused some damage by wetting a stock of dry goods. These cases, however, are comparatively few, and should not be used as an argument against automatic sprinklers.

The automatic sprinkler is undoubtedly one of the most important factors in fighting large fires. When the heat in a room where these are installed reaches a dangerous degree the sprinkler head automatically opens and begins to throw water on the flames, at the same time turning in an alarm that the building is on fire and asking for outside assistance.

The history of the automatic sprinkler and its experience in fighting fires will prove most interesting and instructive reading for students.

QUESTIONS.

What is the automatic sprinkler? What other advantageous attachment does the automatic sprinkler have? What buildings in particular should be equipped with them? How were the first automatic sprinklers made? How are the modern ones constructed? Tell how they operate? Do firemen and insurance companies recognize their merit? If they do not work properly, who is usually to blame for it? Is it an important factor in reducing the fire loss of the country?

LESSON 9.

Purpose of Fire Marshal Laws.

Twenty-eight states in the Union have enacted a law creating the office of fire marshal or fire commissioner as follows: Alabama, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Montana, Nebraska, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia, Wisconsin.

"Despite the effort of the public press, the insurance periodicals, fire-prevention and protection associations, and all the other numerous agencies engaged in the attempt to arouse the public to the enormity of their fire waste, fire rages merrily up and down the land seeking that which it may devour and finding much available. But it no longer goes unchallenged by public authorities."

In recent years in a number of the states there has been added to the numerous agencies engaged in the effort to reduce the fire waste the office of state fire marshal.

The first fire marshal law was enacted in Massachusetts for the purpose of punishing the crime of arson or incendiarism (these crimes are analogous). Incendiarism is a crime older than insurance itself. It is the malicious burning of one's own or another's property through recklessness, for spite, to hide other crimes, or to defraud an insurance company.

It is a most vicious and despicable crime. The person so wicked and depraved that he will destroy property maliciously does not consider the life or property of any one else. He has one malicious object in view which he seeks to accomplish, and he considers not his innocent neighbors nor cares whether he destroys their life or property.

Whether a criminal burns property for revenge or for gain, he plans well and carefully; he lays his plot in a sneaking, cunning way. He covers all tracks and clues as he goes along, taking his time, and always and ever taking care that no one shall detect him. If he is successful in his project he burns all traces of the origin of the fire with the fire itself, making it most difficult to bring him to justice, for judges and juries are reluctant about convicting on circumstantial evidence.

The various fire marshals of the country have an arduous task in this work of convicting the incendiary. It is hard to believe that any one could be so vicious as to deliberately destroy his property in order to obtain money from an insurance company; such a person is a criminal of the most dangerous type. The insurance company in good faith has sold perhaps $1,000 worth of insurance for $5; $5,000 worth for $25, or $10,000 worth for $50 or $100 (these are ordinary rates). The insurance company pledges itself to pay the face of the policy to the assured in case the property is destroyed by fire. They guarantee to take the risk, and of course they are supposing that the property will not burn, or that if it does it will be from an accidental cause. If it burns through no fault of the assured they willingly pay the loss and abide by their agreement or contract. When the property is intentionally set on fire the person commits a double crime—arson and fraud. He betrays the confidence of the company that trusted him.

The incendiary buys this insurance from the company with the deliberate object in view that he will burn the property and obtain the ready cash for the full amount of the policy. Of course if he is caught, if evidence can be brought to prove that he deliberately set the fire, he will receive a long sentence in the penitentiary. Many wicked people are now in our penitentiaries paying the penalty of this crime. But the majority of these criminals are at large, courts being unable to convict them. The man who burns for spite or revenge is a murderer at heart. In olden times incendiarism was punishable by death.

The encyclopaedia Britannica defines arson as follows: "Arson (from Lat. ardere, to burn) a crime which has been described as the malicious and voluntary burning of the house of another (3 Co. Inst. 66). At common law in England it is an offense of the degree of felony. In the Roman civil law arson was punishable by death. It appears early in the history of English law, being known in ancient laws by the term of **boernet.** It is mentioned by Cnut as one of the bootless crimes, and under the Saxon laws was punishable by death. The sentence of death for arson was, says Stephen (Commentaries, iv, 80), in the reign of Edward I. executed by a kind of **lex talionis,** for the incendiaries were burnt to death, a punishment which was inflicted also under the Gothic institutions. Death continued to be the penalty at least down to the reign of King John, according to a reported case (Gloucester Pleas, pl. 216), but in course of time the penalty became that of other common law felonies, death by the gallows. It is one of the earliest crimes in which the **mens rea,** or criminal intent, was taken special notice of. Bracton deals at length with the **mala conscientia,** which he says is necessary for this crime, and contrasts it with **negligentia** (f. 146b), while in many early indictments malice aforethought (**malitia praecogitata**) appears. Arson was deprived of "benefit of clergy" under the Tudors, while an act of 8 Henry VI. c. 6 (1429) makes the wilful burning of houses under particular circumstances high treason, but acts of I Ed. VI. c. 12 (1547) and I Mary (1553) reduced it to an ordinary felony."

LESSON 10.

Fire Commission Law and State Fire Day Law.

In 1909, the State of Nebraska, realizing the enormous, unnecessary fire waste going on daily in the state enacted a Fire Commission law embodying all the progressive principles relating to this important subject. This law, first of all, provides means by which the crime of arson may be extermінted or at least suppressed and punished. It then takes up fire-prevention and provides a penalty for persons maintaining flagrant, dangerous fire hazards. It covers the subject of teaching fire-prevention in schools, and provides means by which this subject shall be placed in all the schools of the state.

The following is a copy of this very good and necessary law:

FIRE COMMISSION LAW OF NEBRASKA—1909

Section 1. (Fire commission—Commissioner—Deputies.) There is hereby created a fire commission for the state of Nebraska, with headquarters at the Capitol, which shall have general charge of the inspection of buildings and premises, and the investigation of all fires occurring in this state by which property has been destroyed or damaged. The affairs of said commission shall be conducted by a fire commissioner and such subordinates as are provided for by this act. The governor is hereby made the fire commissioner. Within thirty days after this act becomes a law and every two years thereafter, between the 15th day of January and the 15th day of February, he shall appoint two deputies who shall hold office for a term of two years and until their successors are appointed and qualified, who may be removed by the governor at any time. One of said deputies shall be designated as the chief deputy fire commissioner. He shall reside in the city of Lincoln and shall, under the direction of the fire commissioner, devote his entire time to the affairs of said office. The other deputy shall be designated as assistant deputy fire commissioner. Said chief and assistant deputies shall each give a bond to the state of Nebraska in the penal sum of $5,000.00 for the faithful performance of the duties of his office. In addition to the deputies herein provided for, the State Fire Commissioner may appoint any person as inspector who may be known to him to be competent and skilled in the inspection of buildings and their contents. Such person shall have all the powers of other deputies to enter and inspect buildings, including their contents and occupancies under section five thereof and it shall be the duties of such inspectors to report to the Fire Commissioner any faulty or dangerous conditions found. Such deputy inspectors to be duly commissioned to serve without compensation.

Sec. 2. (Fires—Investigations—Records.) The state fire commissioner and the chief of the fire department of every city or village in which a fire department is established, and the mayor of every incorporated village or town in which no fire department exists, shall investigate the cause, origin and circumstances of every fire occurring in such city or village, and the sheriff may be required by the fire commissioner to investigate the cause, origin and circumstances of every fire occurring in his county without the limits of any organized city or village therein, by which property has been destroyed or damaged, and shall especially make investigation as to whether such fire was the result of carelessness or design. Such investigation shall be begun within two days, not including the Sunday, after the occurrence of such fire, and the fire commissioner or his deputy shall have the right to supervise and direct such investigation whenever he deems it expedient or necessary. The officer making investigation of fires occurring in cities, villages, towns or counties shall forthwith notify said fire commissioner, and shall, within one week of the occurrence of the fire, furnish to the said fire commissioner a written statement of all the facts relating to the cause and origin of the fire, and such other information as may be called for by the blanks provided by said fire commissioner. The state fire commissioner shall keep in his office a record of all fires which may be determined by the investigations provided by this act; such record shall at all times be open to the public inspection.

Sec. 3. (Further investigation.) The state fire commissioner shall, when in his opinion further investigation is necessary, take or cause to be taken testimony, on oath, of all persons supposed to be cog nizant of any facts or to have means of knowledge in relation to the matter as to which an examination is herein required to be made, and shall cause the same to be reduced to writing; and if he shall be of the opinion that there is evidence sufficient to charge any person with the crime of arson, he shall cause such person to be arrested and charged with such offense, and shall furnish to the proper prosecuting attorney all such evidence, together with the names of witnesses and all the information obtained by him, including a copy of all pertinent and material testimony taken in the case. No action taken by such Fire Commissioner shall affect the right of any policy holder in respect to his loss by reason of any fire so investigated, nor shall the result of any such investigation, or the fact that an investigation was requested or made, be given in evidence upon the trial of any civil action upon such policy.

Sec. 4. (Witnesses—Evidence.) The state fire commissioner and his deputies shall each have power, in any county in the state of Nebraska, to summon and compel the attendance of witnesses before them, or either of them, to testify in relation to any matter which is by the provisions of this act the subject of inquiry and investigation, and may require the production of any book, paper, document deemed pertinent thereto by them or either of them; such witnesses should be allowed such fees as are now allowed by the district courts of this state. Said state fire commissioner and his deputies are each hereby authorized and empowered to administer oaths and affirmations to any person appearing as witness before them; and false swearing in any matter or proceeding aforesaid shall be deemed perjury, and shall be punished as such. Any witness who refuses to be sworn, or who refuses to testify or who disobeys any lawful order of said state fire commissioner or his deputy, or who fails or refuses to produce any book, paper or document touching any matter under examination or who is guilty of any contemptuous conduct, after being summoned by them or either of them, to appear before them, or either of them, to give testimony in relation to any matter or subject under investigation as aforesaid, may be summarily punished by said fire commissioner or his deputy as for contempt, by a fine in a sum not exceeding one hundred dollars, or be committed to the county jail until such time as said person may be willing to comply with an order made by said state fire commissioner or deputy state fire commissioner as provided in this act. Said state fire commissioner and his subordinates, or either of them, shall have authority at all times of the day and night, in the performance of the duties imposed by the provisions of this act, to enter upon and examine any building or premises where any fire has occurred, and other buildings and premises adjoining or near the same. All investigations held by, or under the direction of said state fire commissioner may, in his discretion, be private, and persons other than those required to be present by the provisions of this act, may be excluded from the place where such investigation is held, and witnesses may be kept separate and apart from each other, and not allowed to communicate with each other until they have been examined.

Sec. 5. (Dangerous buildings.) Any building, or other structure, which for want of proper repair, or by reason of age and dilapidated condition, or for any cause, is especially liable to fire, and which is so situated as to endanger other buildings or property; and any combustible or explosive material, or inflammable conditions placed, kept, or existing in or upon any building or premises which is dangerous to the safety of said building or premises, and the same is so situated as to endanger other buildings or property, is hereby deemed and declared to be a nuisance; and any owner or occupant of such building or premises who shall cause, continue, or maintain any such nuisances shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not exceeding the sum of $500 and the court shall order said nuisance to be abated.

The State Fire Commissioner and his subordinates, upon complaint of any person having an interest in any building or property adjacent, and without any complaint, shall have the right at all reasonable hours for the purpose of examination to enter into and upon all buildings and premises within their jurisdiction. Whenever any of said officers shall find any building or other structure, or any material placed, kept, or maintained in or upon any building or premises, constitutes a nuisance within the meaning of this section, he shall order said nuisance to be abated, and such order shall be forthwith complied with by the owner or occupant of said building or premises. Provided, however, that if the said owner or occupant shall deem himself aggrieved by such order he may, within twenty-four hours, appeal to the State Fire Commissioner, and the cause of the complaint shall be at once investigated by direction of the latter, and unless by his authority said order is revoked, the same shall remain in force and be forthwith complied with by said owner or occupant. If any such owner or occupant shall fail to comply with said order, he shall be prosecuted for maintaining a nuisance, and said nuisance shall be abated.

Sec. 6. (Officers, misfeasance.) Any officer referred to in section 2 herein, who neglects to comply with any of the requirements of this act shall be punished by a fine of not less than twenty-five dollars, nor more than two hundred dollars.

Sec. 7. (Salaries—Expenses, how paid—Insurance Companies.) The chief deputy State Fire Commissioner shall receive an annual salary of $2,000 and each assistant Deputy Fire Commissioner $1,500, payable monthly, and their actual and necessary traveling expenses while engaged in the duties of their office. Said Fire Commissioner shall employ clerks and assistants and incur such other expense as may be necessary in the performance (of the duties) of his office, not to exceed, including salaries, such sum as may be paid into the state treasury in the manner hereinafter provided. For the purpose of maintaining the department of the State Fire Commissioner, and paying the expenses incident thereto, every fire insurance company except farmers' mutual, whether upon the stock or mutual plans, doing business in the state of Nebraska, shall pay to the state treasurer in the month of January, annually in addition to the taxes now required by law to be paid by such companies, three-eighths of one per cent on the gross fire premium receipts after deducting cancellations and re-insurances of such companies on all business done in Nebraska the year next preceding, as shown by their annual statements, under oath to the state auditor, the first annual payment to be made within thirty days after this act goes into effect and each and every annual payment thereafter to be made on or before the first day of January of each succeeding year. No certificate shall be issued by the auditor to or on behalf of any such company, authorizing it to do or continue business in this state while any such percentage or tax remains due and unpaid. The state treasurer shall hold the money so received into the treasury as a special fund for the maintenance of the said office of State Fire Commissioner, and the expenses incident thereto. The State Fire Commissioner shall keep on file in his office an itemized statement of all expenses incurred by his department, and shall approve all vouchers issued therefor before the same are submitted to the auditor of state for payment, which said vouchers shall be allowed and paid in the same manner as other claims against the state.

Sec. 8. (Deputies' duties; readiness to serve.) The deputies of the State Fire Commissioner shall not engage in any other business, and shall at all times be ready for such duties as are required by this act.

Sec. 9. (Annual report.) The Fire Commissioner shall submit annually, as nearly as consistent with full and accurate preparation, and not later than the 15th day of January, a detailed report of his official action.

Sec. 10. (Compensation—Chief, mayors, sheriff.) There shall be paid to the chiefs of fire departments, and to mayors of incorporated villages, who do not receive compensation for their services as such chiefs and mayors, and to county sheriffs who are by this act required to report fires to the State Fire Commissioner, the sum of one dollar and fifty cents for each fire so reported to the satisfaction of the State Fire Commissioner, and in addition thereto, mileage at the rate of ten cents per mile for each mile actually and necessarily traveled to the place of fire. Said allowance shall be paid at the close of each fiscal year, out of any funds appropriated for the use of the office of the said State Fire Commissioner.

Approved April 3, 1909.

STATE FIRE DAY LAW.

Section 1. That for the purpose of creating a public sentiment. and in order that the people of this state shall have called to their attention the great damage caused, both to life and property, by fire, there is hereby set apart and established the first Friday in November which shall be designated and known as "State Fire Day." This day shall be observed by the public, private, and parochial schools of the state with exercises appropriate to the subject and the day.

Sec. 2. That for the purpose of instruction in fire dangers, and in methods of fire prevention, it shall be the duty of the Chief Deputy Fire Commissioner and of the State Superintendent of Public Instruction to prepare a book conveniently arranged in chapters, or lessons, such chapters or lessons to be in number sufficient to provide a different chapter or lesson for each month of the maximum school year. The expense for publishing the books of instruction, or other literature on the subject of fire dangers, shall be paid out of the special fund for the maintenance of the Fire Commissioner's office, and said books of instruction shall be distributed by the State Superintendent of Public

Instruction, in quantities sufficient to provide a copy for each teacher. And every teacher or instructor in every public, private, or parochial school shall devote not less than thirty minutes in each school month, to instruction of pupils in the subject of fire dangers, and in the methods of fire prevention.

Sec. 3. It shall be the duty of the members of school boards, school directors, trustees, or other body of persons having control of the schools of any city, village, or district, to cause a copy of this act to be printed in the manual or handbook prepared for the guidance of teachers, where such manual is in use or may hereafter come in use.

QUESTIONS.

Where does the State Fire Commissioner have his office? Who conducts the affairs of the office? How is the Fire Commissioner appointed? What are the duties of a fire chief of each town in connection with State Fire Commissioner? How does the Fire Commissioner receive the records of all fires that occur in the state? How does the Fire Commission Department proceed with its investigations? What is the law in regard to dangerous buildings or conditions? In what sum can a person maintaining a fire nuisance be fined? What are the duties of the deputies and inspectors? Why was the "State Fire Day" law enacted? How is this day to be observed by schools? What is the minimum time provided for teaching fire-prevention?

HIGH SCHOOL—ELEVENTH AND TWELFTH GRADES

LESSON 1.

Geological Survey Report of Fire Losses in the United States.

The United State government, realizing the importance of the fire-prevention campaign that is being agitated throughout the United States, made a special investigation into the matter of the enormous fire losses anually in this country.

The time is not far distant when our national Congress will enact a law creating a bureau at Washington for the purpose of carrying on a national campaign of FIRE-PREVENTION. The bureau will have as one of its objects the supression of arson. But its principal and most important duty will be the education of the public in the matter of the safe and fireproof construction of buildings, and the practice of careful, prudent habits regarding fire. The United States government could expend money in no better way for the great good of the people generally than in conserving the life and property of its inhabitants from fire. The government has already created departments for the conservation of our forests, our minerals, our waterways and other material resources; and it is time the nation was taking an active interest in not only advising and teaching but compelling its people to conserve their CONSTRUCTED resources.

The Fire Tax.

Report by the Geological Survey.

The following is the report made by the Geological Survey:

"The United States government owns buildings that cost more than $300,000,000 and is spending $20,000,000 a year for new buildings. None of these buildings are insured against loss by fire. Insurance at the ordinary rate would cost more than half a million dollars a year, and the government avoids this great tax by constructing buildings that are securely fireproof.

"Fireproof Buildings May Be Cheaper.

"Tests to determine the strength and fire resistance of building materials are now made by the United States Geological Survey, and although these tests are designed primarily to meet the needs of the government as the largest consumer, their results are also available for general use.

"The results already obtained show that cheaper fireproof materials can be used and that the difference in cost between fireproof and inflammable buildings will soon become so small that it will cease to encourage flimsy construction. They indicate that three to six times the necessary amount of material is habitually used in structural work. They also show the necessity of better building codes in cities, and especially of a better enforcement of the codes already enacted if the present enormous fire losses are to be diminished.

"Inquiry to Show Loss by Fire.

"The contrast between the small losses by fire to government buildings and the immense losses reported from the country as a whole led the Geological Survey to make an inquiry as to fire losses in the United States and as to their exact cost to the people. The results of this inquiry are presented in the survey's bulletin 418, just published, which can be obtained free by applying to the Director of the Survey at Washington. The report is entitled "The fire tax and waste of structural materials in the United States," and was prepared by H. M. Wilson and J. L. Cochrane, of the survey. The inquiry covered not only the value of the property destroyed by fire but also the cost of maintaining fire departments, the amount of insurance premiums paid less the amounts returned, the cost of protective agencies, the additional cost of water supplies, and other elements of the fire loss.

"Fire Loss Over a Million Dollars a Day.

"The investigation disclosed the fact that the total cost of fires in the United States in 1907, excluding that of forest fires and the marine losses but including excess cost of fire protection due to bad construction and excess premiums over insurance paid, amounted to over $456,485,000, a tax on the people exceeding the total value of the gold, silver, copper, and petroleum produced in the United States in that year. The cost of building construction in 1907 in forty-nine leading cities of the United States reporting a total population of less than 18,000,000 amounted to $661,076,286, and the cost of building construction for the entire country in the same year is conservatively estimated at $1,000,000,000. Thus it will be seen that nearly one-half of the value of all the new buildings constructed within one year is destroyed by fire. The annual fire cost is greater than the value of the real property and improvements in either Maine, West Virginia, North Carolina, North Dakota, South Dakota, Alabama, Louisiana, or Montana. In addition to this waste of wealth and natural resources, 1,449 persons were killed and 5,654 were injured in fires in the United States in 1907.

"Fire Loss Eight Times That in Europe.

"The direct loss by fires in this country is eight times as much per capita as in any country of Europe. The actual fire loss in the United States due to the destruction of buildings and their contents amounted to $215,084,709, a per capita loss of $2.51. The per capita loss in the cities of the six leading European countries amounted to but 33 cents. Comparisons of the total cost of fires, which includes the items already stated, show that if buildings in the United States were as nearly fireproof as those in Europe the annual fire cost would be $90,000,000 instead of $456,000,000.

"Scope of the Report.

"The report states the method of gathering the statistics collected, makes an analysis of the fire loss in city and country and on frame and brick buildings, and contains tables showing the increased cost of fire protection due to faulty construction. The predominance of frame buildings is set down as the most important cause of the great fire waste in the United States. Defective construction and equipment constitute a second cause."

Bulletin 418 says:

"The total fire cost in this country is five times as much per capita as in any country of Europe * * * The per capita losses of the six leading European countries amounted to 33 cents, or about one-eighth of the per capita loss sustained in the United States. * * *

"The fire waste for the last thirty-three years, according to the National Board of Fire Underwriters, reached the tremendous total of $4,484,326,831. * * * The situation becomes more appalling when it is realized that this waste is increasing by leaps and bounds each succeeding year. It is reasonable to assume that fully as much money was spent for fire protection, making a total of almost $9,000,000,000 in thirty-three years. * * *

"During the year 1907, according to information gathered by the

United States Geological Survey, fires caused the death of 1,449 persons and the injury of 5,654. These figures are incomplete and perhaps do not represent more than half the persons who are victims of fires. Many of the fire chiefs of large cities failed to report any deaths, because such were not properly included in their annual reports.* * *

"The fire at the Iroquois theater in Chicago, December 30, 1903, in which six hundred persons lost their lives, was a terrible object lesson; yet this was not sufficient to stop these disasters. January 13, 1908, fire in an opera house at Boyertown, Pennsylvania, cost the lives of nearly two hundred women and children. Two months later, March 4, 1908, one hundred and sixty-five children were burned to death in a school house at Collinwood, Ohio. If the buildings destroyed had been properly constructed and equipped none of these lives would have been lost.

"In an analysis of fire loss the fact stands out prominently that much of it is due to fires that extend beyond the limits of the buildings in which they start. It is impossible from the figures obtained during the inquiry to give any definite statement as to the amount of loss due to exposure, but some years ago prominent underwriters estimated that at least 27 per cent of the fire loss comes from fires that extend beyond the buildings in which they originate.

"The average annual cost of maintaining fire departments in European cities is 20 cents per capita, and in corresponding cities in the United States $1.53 per capita, or seven and a half times as great."

The startling array of these facts and figures, as published by the United States government after an exhaustive investigation by its own technologists, should induce each of us to take a deep interest in suppressing this enormous fire loss.

QUESTIONS.

Is the United States government taking an interest in fire-prevention work? What will it do before long? Can our government help reduce the fire losses? Does the government insure its buildings? Why not? Is it wise to build fire-proof buildings? How much did the government find we were losing each year by fire? What proportion does the property destroyed by fire bear to the property constructed each year? How many people are killed and injured each year by fire? Give one reason why the fire losses of Europe are less than those of the United States? What is the estimated fire loss of this country for the last thirty-three years? Do our fire departments cost more than the fire departments of Europe? What should the knowledge of this enormous fire loss induce us to do?

LESSON 2.

What To Do in Case of Fire.

In case of fire never hesitate to call the fire department. Fires are always small in the beginning, and usually can be put out if detected in time. Therefore, if you discover fire in your home or any other place, first turn in the alarm by telephone or by the nearest fire-alarm box; speak plainly and distinctly; give the nearest cross streets and the number of the house or building. After you have sent in the alarm do all you can to put out the fire. Upon the arrival of the firemen render all the assistance possible. Tell the firemen if there are any oils or dangerous explosives on the premises so that they may know just what to do. By sending in the fire-alarm, you will not lose valuable time if the fire spreads. While the fire department is on its way, try and fight the fire yourself; if you can not do anything inside the premises go outside and close the doors; shut the fire in one room or closet, if possible. This will keep it from spreading. If you are in the building when the fire starts and the room fills with smoke before you can get out, crawl on the floor to make your escape. The clearest air is always near the floor. Cover you head with a cloth, or a wet towel, if possible. DON'T GET EXCITED. Never jump from high buildings. The firemen with ladders are almost sure to reach you in time. Never go out on the roof except as a last resort, and unless you can step over onto an adjoining building, that is not on fire. Fire always works up. Do not jump or run through a flame without first covering your head with a wet towel or heavy cloth. If you have to stay in a room filled with smoke until some one rescues you, keep the doors of the room shut. Open the windows from the top; wet a towel, if you can, and placing it over your face, breathe through it instead of through the nose, so as not to inhale smoke. If the room fills with smoke, creep on the floor to a window. If your home is equipped with fire-extinguishers, as it should be, the first thing to do is to use one. In nine cases out of ten you can put out the fire yourself, if there is at hand a good fire-extinguisher and you have been taught how to use it.

We wish we could impress emphatically upon every one the fact that no building occupied by human beings should be without a good fire-extinguisher. Small fire-extinguishers can be obtained at a slight cost. There are many different kinds of good extinguishers and of different patterns, and all easy to operate. A good fire-extinguisher will often put out a fire in its incipiency. Sometimes just a small quantity of this fire-extinguishing material thrown on a fire will put it out instantly, and kill at the start what might be a frightful fire. As we have stated in a previous lesson, be sure these extinguishers are approved by the NATIONAL BOARD OF FIRE UNDERWRITERS. In country homes they should be looked upon as a necessity, and every one, even the children, should be instructed in their use. Fire buckets are also good, but are unsightly as compared with the extinguishers.

If you have a ladder at hand, as has been suggested in previous lessons, and the fire is on the roof, you can easily climb up and throw the extinguishing material on the fire. If you have no fire-extinguisher, and the fire is in the chimney, throw salt, flour, soda, sand, etc., in the stove and down the chimney. After a chimney fire is out, the house should be carefully examined to be sure the fire is not smouldering in some hidden place. If there is any smoke around, fire is surely burning somewhere. Smoke should always create suspicion. Sometimes a hidden fire will give off smoke for hours before it starts into a blaze. Such fires are often found between floors, roofs, ceilings, in partitions, closets, store rooms, attics, and cellars. In most cases they are caused from the stove, furnace, chimney, stovepipes, electric light wiring, and even sometimes by mice and matches. Electric wire fires nearly always start in the walls or cellars and burn quickly.

Do not throw water on gasoline or oil fires, but use the extinguisher or smother the blaze with rugs or heavy clothing. Be careful to keep the face, and especially the mouth, as far away from the flame and smoke as possible. To inhale smoke is injurious. To inhale flame is often fatal. If the smoke is very dense, do not stand erect when going into it, but get close to the floor where the air is purest, and fight it from there. The first and most important thing to do in case of a fire in a building is TO SHUT OFF THE DRAFT, THAT IS, CLOSE THE DOORS AND WINDOWS. Try and shut the fire in a closet or a room until your have your water pail or your fire-extinguisher; or in case you have neither of these, wait until the fire department comes. If the fire has no draft, it will burn slowly and give you more time to fight it. If a lace curtain or portiere is on fire, pull it down and then throw water on it and smother the flames.

Fires between the floors or ceilings are very dangerous. They gradually spread all through the house, and the fire will cover a large area before detected. In working at a fire do not throw the water carelessly, but take good aim and be sure that it hits the fire; to scatter the water by dipping it out of the bucket with your hands if no dipper or cup is available. Throw water on the lower part of the fire. If you have a fire extinguisher, **you should in every case use that first.** If it is a liquid extinguisher, take good aim and throw it upon the fire. If it is a dry powder, throw it so it will literally suffocate the blaze.

Call the fire department just as soon as you detect a fire. Be careful, however, and do not allow yourself to become so excited as to send in an alarm when there is no real fire.

QUESTIONS.

What is the first thing you should do in case of fire? How should you turn in the alarm? What should you do after turning in the alarm? How and why should you try and keep the fire in one room? If you are in the building when the fire starts and your room fills with smoke what should you do? Should you ever jump from a high building? If you have to pass through flames to escape, how should you protect your head and face? If you have to stay in a room filled with smoke for any length of time, what should you do? Should you use the fire-extinguisher as soon as you discover a fire? Should every building be equipped with a good fire-extinguisher? Are they particularly necessary to country homes? Are ladders a necessity around homes? How can you put out chimney fires? Should you always investigate the premises when you smell smoke? What often causes hidden fires between floors, roofs, ceilings, partitions, etc? How should you treat oil or gasoline fires? Is it very dangerous to inhale smoke or flame? Is it important to shut all doors and windows in case of fire? Why? How should you throw water upon a fire? Should you always be very sure there is a fire before turning in an alarm?

LESSON 3.

Fire-Prevention Societies.

Fire-prevention societies should be organized in every city, large or small. Commercial clubs, civic federations, chambers of commerce and women's clubs are all interesting themselves in fire-prevention and are taking interest in the matter of education on this subject. A fire-prevention society organized in every school where the students have the advantage of these lessons would be a great benefit. Your elder brothers, sisters and friends did not have the privilege of instruction along these lines. They were not educated in this subject, and it is through your efforts and example that they are to receive their knowledge. You should organize a fire-prevention society at your school, elect your officers; have your regular meetings, and talk on different ways and means of preventing fires. Have a supply of blanks printed, as per sample at the close of this lesson. Each member should take one of these inspection blanks home and fill it out. After you fill out these blanks you should delegate the secretary of your society to send them to the fire marshal of your state. Perhaps your own city has a fire marshal, as most of our large cites now have, the city fire marshal's duties being about the same in his city locally as the state fire marshal's are in the state generally. He probably would be glad to come to your school and talk to you on the subject of fire prevention, if you invite him to do so.

If the gasoline and kerosene in your home is kept in an unsafe manner have it changed.

Have protection put over any swinging gas bracket.

Have a metal receptacle for ashes.

Keep all your oily and greasy rags and waste in metal receptacles. If your parents can not buy one you can obtain a large tin can or barrel with a cover for this purpose.

Have your lamps filled by daylight.

Keep your gasoline and kerosene out of doors.

Never fill your gasoline stove while the stove is burning or while there is any fire or artificial light in the room.

Gasoline is more dangerous than gunpowder.

Remember gasoline vapor goes down, and if a match falls in a room where the vapor is it will ignite.

Never clean clothing with gasoline in the house.

Never hang clothing that has been cleaned with gasoline in a closed room or where it will come in contact with excessive heat or flame from gas light, lamp or stove.

Never take a lighted match while looking for a leak in a gas, gasoline or an acetylene gas pipe.

Never build bonfires on windy days. Never build them near buildings.

Keep matches in metal boxes and out of the reach of children.

Use the Safety Match in Your Home.

Have the chimney, stovepipes and stoves cleaned and looked over at least twice a year.

Have a metal cap over every unused stovepipe hole.

Always have a metal protection under the stove.

Never place a stove closer than two feet to a wall or wood partition.

Never build a hot fire in a stove and go away and leave it.

Never extend a stovepipe through a wood partition, ceiling, floor, or wall unless protected by metal ventilator.

Never cover a flue hole with paper.

Always connect your stovepipe firmly, and then wire or securely fasten the same in order that it may not become disconnected.

Never permit a stovepipe to enter the chimney in a closet under a stairway or attic.

Stoves with broken legs, broken doors, or with cracks in the fire box should not be used.

Never place kindling in the oven and leave it over night or during your absence from the house.

Clothing should never be placed near a stove to dry and left with no one in the room to watch it.

If woodwork near stove or furnace begins to burn brown it has been heated to such an extent that it is charcoal, and heating this charcoal to the same heat again will set it on fire.

When lighting a gas stove or jet always light your match before you turn on the gas.

Never roll up rags saturated with oil or turpentine in a ball and leave them in a building.

All brick flues should be inspected once a year, and if any cracks or holes are found in the flues they should be built or repaired.

Never use cotton or inflammable decorations on a Christmas tree if you have lighted candles on the tree. Always keep a bucket of water near the tree.

When thawing out frozen water pipes be careful, never go away and leave a candle or any fire burning under the pipes.

Never allow children to play with matches.

Never hang electric drop cords over nails, hooks or metal.

Every home should have one or more approved fire-extinguishers and every person, including children, should be taught how to use them.

See that you have none of the fire dangers herein mentioned in your home.

INSPECTION BLANKS FOR HOMES.

City or Town..........................State......................

Date.............................19....

Name ....
Address ....
Kind of Building:
Wood ....Brick ....
Stone.................Veneered or iron clad................
What do you use for lighting:
Gas ....Gasoline ....Electricity ....
Acetylene .... Lamps.......................
And find building in..................................Condition
How much gasoline and kerosene kept on hand?.................
Where do you keep your kerosene or gasoline?.....................
Do you use a gasoline or kerosene stove?.........................
Do you fill or clean your lamps during the day?...................
Have you a metal receptacle for ashes?...........................
Do you throw ashes near buildings?...............................
Do you have a metal receptacle for waste?........................
Has your chimney been cleaned out this year?.....................
Have you a fire-extinguisher in your home?.......................
Is your stove a safe distance from the wall?......................
Is there a metal protection under your stove?.....................
Do you use Safety matches?.......................................
Where do you keep them?..
Are swinging gas brackets protected with a wire globe?..............
Are your barns, granaries, garages, and all outbuildings free from fire dangers?...
What have you done, if anything, to make your home safe from fire?
....
....
....

Note.—Write the State Fire Marshal and he can furnish you with these blanks, or each child can make a copy and take one home and fill it out.

QUESTIONS.

Are fire-prevention societies being organized throughout the country, and by whom? Should a fire-prevention society be organized in every school? Why? What can you do to make your society effective? What precautions should you exercise? In what different ways can you reduce the danger from fire in your home? What precautions are you going to take regarding gasoline, ashes, oily and greasy rags, filling of lamps, stoves, stovepipes, chimneys, etc.? What are you going to do with the inspection blank printed herein?

LESSON 4.

Science of Fire Prevention and Benefits to be Derived from its Study.

The fire-prevention movement is one upon which the insurance companies and the assured may enter with equal advantage and earnestness, because by it the companies may hope to reduce their losses and correspondingly increase their earnings, while the assured may expect, with decreased losses, to obtain reduction in rates, taxes, and the cost of living.

The insurance companies already know the benefit to be derived from a decrease in fire losses; the general public has as yet no conception of the good that it means to them, and they have to be educated along these lines. The insurance companies have one great fault to correct, and that is, they must arrive at some solution of the problem of obtaining honest, conscientious, local agents. The local agent should be a man who would not insure property for more than its actual value for the purpose of collecting a few additional cents in commissions. If the insurance companies could control their local agents—if they could depend upon them to send in only honest risks, a great good would follow, not only for the insurance companies but for their policyholders. No one should want a policy written for more than their property is actually worth—no honest person does. However, very often an applicant for insurance thinks that as it will cost only a few dollars more to add a hundred or two hundred dollars more to his policy than the property is worth, he is tempted to do it. He does not wish it to burn, but thinks if it should he will be on the profit-receiving side. This is downright dishonesty, and if he has a fire he is liable to have trouble, even if his fire starts from an accidental cause, for he may be suspected and perhaps accused of arson, because it can be shown he would have a motive in view on account of the overinsurance. Insure your property for a fair value; do not overestimate its worth. If the local agent wants you to insure your property for more than it is worth, ask him why he wants you to do it. His motive is not good. Appointing of local agents by fire insurance companies is a serious problem with them, and one which they will have to solve in the very near future.

The assured, too, has his obligations to perform. He must not only know about his own hazard, but also the hazard of his neighbor and any adjoining property. He must inform himself of the many causes of fire and how to prevent them. This information must govern the physical and moral hazard. The manner of conducting this educational campaign must be logical and practical, and therefore so simple that every one will understand. The careful citizen does not have to tolerate careless, dangerous conditions in his neighbor that will hazard his property, and he should not tolerate them. If he does everything possible to reduce to a minimum the chances of fire on his own property he should exact the same caution from his neighbor.

Fire prevention is a science, a science which becomes more intricate as the world progresses in manufacturing, invention, and discoveries. But this science of the dangers of fire and how to prevent them, when studied and comprehended, is easy to practice and apply.

"An average of over $250,000,000 per year, or $500 per minute for every hour of the twenty-four, is our country's contribution to the fire waste of the world."

It would seem that to reduce this fire loss the logical course to pursue would be to arouse the American people to a sense of their individual responsibility, and then to so popularize this new subject of conservation as to impress upon every citizen the importance of constant care regarding the fire hazard. American students will surely avail themselves of the knowledge offered them. The general public seems wholly irresponsible and negligent regarding the fire waste of the nation. This indifference perhaps is largely due to the infinite wealth and exhaustless opportunities in our virtually new country. A national campaign is being carried on to conserve our natural resources, and it seems that now is a most opportune time to begin a crusade for the preservation of our constructed resources. If our forests are worth saving, are not our homes and factories also? They are built from these very forests, and it would seem they should be of more value when constructed into buildings than they were before time and energy had been spent upon them. It is well to conserve our forests, munificent gifts of the Almighty for the benefit and comfort of mankind; but it does not seem to have occurred to us that to conserve that which man has built by his genius, his brains, and the sweat of his brow is a duty we owe to both God and man.

Recognizing this, we are teaching fire prevention to enable you to meet your personal responsibility. Now how are we to reach the uninstructed man with our knowledge; and, having reached him, induce him to reckon with it and amend his careless habits? You students must help us to do this. You can carry this knowledge into every home in the nation. You can do a great good by informing the public of the frightful fire loss of the country. Do not overlook fire dangers when you see them. Stop and correct them. Teach the housewife careful habits in regard to the many fire dangers in the home. Try and teach men to exercise care with matches, cigar stubs, and other everyday fire dangers. We should not be compelled to go to the expense of doubling our fire departments and our water supplies, but this we will have to do if the public remains indifferent to careless fires.

If we were to lose the amount of money each year in wheat, cotton, beef, or sugar that we lose in unnecessary fire losses, or if business failures should aggregate that figure, every citizen of this country would be greatly alarmed, and demand that somehow, some way, such losses should be prevented.

It is a just but uncomplimentary criticism upon American progressiveness when we say that the citizens of the United States have not yet discerned that fire insurance is a tax, shifted through the buying and selling processes upon the entire community. Every fire hazard tends to increase this tax, and every element of fire prevention tends to lessen it. Merchants and manufacturers, as a rule, add the cost of insuring their property and stocks to the selling price of their goods, and hence the consumer finally pays the insurance. The rent we pay; everything we eat and wear is affected by the cost of insurance. It would seem if the public can be educated to understand its direct financial interest in the reduction of the fire waste, we shall have enlisted in the cause of this worthy movement the most powerful factor in our present civilization. By exhibiting, comparatively, the fire dangers existing in different cities and states and pointing out different precautions to be taken for fire protection, each community can be plainly and convincingly shown the different ways in which more care and diligence will benefit them. The answer to this problem is briefly this: Every man, woman, and child must have a thorough and well-founded knowledge of **fire prevention,** and then constantly practice and display this knowledge, before our fire losses can be materially reduced.

QUESTIONS.

Why do the insurance companies appreciate the benefit to be derived from a decrease in fire losses? What is the most difficult problem the insurance companies have to solve at this time? Is it wrong to insure property for more than it is worth? Why? What obligations have the assured to perform? What is the most logical way in which to reduce the fire losses of this country? Why is it as important to conserve our constructed as our natural resources? Why are you being taught fire prevention? What can you students do to help? Would it seriously affect this country if we were to lose each year in wheat, cotton, beef, or sugar what we lose in unnecessary fire losses? What is fire insurance? Who ultimately pays this tax? How can cities and towns be effectively instructed in fire prevention?

LESSON 5

Danger of Shingle Roofs and Wooden Laths.

Shingle roofs are the cause of innumerable devastating conflagrations; their use should be prohibited by law. In hot, dry weather they are veritable tinder boxes. Sparks flying from chimneys, locomotives, and from other fires fall upon shingle roofs and set them on fire. Many of the greatest conflagrations which this country has experienced have been caused by sparks flying from one building to another and alighting upon shingle roofs. On a windy day flying and burning shingles are living torches, making it impossible to stop a conflagration which might otherwise have been controlled. They are really a terrible menace to public safety.

Even from an economical standpoint of expense they are not as satisfactory as metal, tile, or gravel roofs because the thin shingle roof, exposed constantly to the elements, wears out quickly and must be repaired or replaced frequently. While the danger of a conflagration is more imminent in a city, yet a spark from a chimney will set a shingle roof on fire as quickly in the country as in a crowded city. Roof coverings, whether in country towns or in great cities, should be of non-inflammable material; tile, slate, metal, tin, gravel, asbestos, or other non-inflammable composition roofs should be used on all buildings. As stated above, the shingle roof is not economical on account of its wearing qualities. The non-inflammable roof, therefore, has two good points in its favor: it will wear longer and eliminates the conflagration danger. With a conflagration raging and a high wind blowing, these burning shingles sometimes are carried for blocks and will ignite any combustible thing upon which they alight. No fire department can effectively fight against them or control a conflagration under such circumstances. The terrible fires of Boston, Bangor, and Chelsea were spread by the shingle roof, as was also the great Chicago fire. The same is also true of the conflagration which occurred in Baltimore in 1904 burning property worth $125,000,000, and which swept San Francisco after the earthquake in 1906, destroying property valued at $500,000,000.

Another good reason why the old-fashioned, out-of-date wooden shingles should be discarded is that the insurance rates are governed to some extent by the materials used in roofing a building. In short, it would be difficult to produce a good, sound argument in favor of the shingle roof. Architects should take this matter in hand and specify for tile, slate, or metal roofs not only for business buildings but for residence structures as well.

The combustibility of a building can be greatly reduced by the universal use of the durable and inexpensive metal lathing. Thousands of houses with their invaluable contents have been practically destroyed by fire and water simply because wooden laths were used in their construction. The fire gets a start in the walls in the lower part of the house and works upward by burning the wooden laths until it finds an outlet at the roof, and to extinguish it the house must be practically destroyed by the firemen with axe and water.

If architects would vigorously take up this matter of shingle roofs and wooden laths in the interest of public safety a great deal would be done toward reducing fire losses.

QUESTIONS.

Are shingle roofs dangerous? Should their use be allowed? Why not? How are conflagrations spread by burning shingles? Are they as economical as a metal or non-combustible roof? Are they as dangerous in the country as in the city? What fearful conflagrations were spread by shingle roofs? Are insurance rates governed to any extent by the materials used for roofing? What is the best material to use for lathing a house? Why are wooden laths dangerous?

LESSON 6.

Origin of Fire Insurance.

Two thousand five hundred years ago forms of insurance were known in the far East. Taxes were levied on each citizen to provide a fund in case of fire or drought. Even this far back in the history of the world exception was taken to incendiary or careless fires, for they appointed judges, priests, etc., to investigate and find out if a fire was accidental or unavoidable. If it was unavoidable the unfortunate person having the fire was reimbursed from the fire or drought fund.

As early as 1240 A. D. in Europe there was a custom to reimburse losses from fire. The citizens of a town rebuilt the destroyed property from a contribution fund unless it was found that a person deliberately caused the fire. If this could be proven the loss was made good from property owned by the criminal, and he was banished from the country.

It was not until after the great London fire, however, that organized insurance companies originated. On September 2, 1666, London was destroyed by fire. For four days and nights fire swept over the city, covering a space of 450 acres; 85 per cent of the buildings of London were totally destroyed. Over $300,000,000 worth of property was destroyed. So terrible was the fate of this city that for one hundred years thereafter September 2 was observed as a day of prayer and fasting. As there was no such a thing as insurance in England at that time, it took years and years to rebuild the city. Three hundred million dollars' worth of property destroyed and gone forever! Think of what this meant! There was no organization to which each citizen could systematically contribute to reimburse the loss. In 1667, or immediately after this catastrophe, various plans were devised for protecting property against loss from fire. In 1680 an insurance firm was organized, known as the Friendly Society, and which was the first mutual insurance company organized. The assured paid a yearly premium, as is the custom now, the rate of payment being based on the hazard of the property; the assured agreed to contribute his share for the payment of any losses sustained in excess of the amounts paid in as premiums. The first insurance companies insured only buildings and dwellings. It became imperative, however, that as stocks of goods and household goods were destroyed by fire simultaneously with the buildings in which they were located that these stocks and goods also needed protection. Consequently, about 1706, companies began insuring them. In 1710 the oldest insurance company in England today was permanently organized and insured buildings and stocks, and dwelling houses and their contents. From this period on fire insurance flourished and prospered in England. Between 1710 and 1720 many stock companies were organized in England and in other European countries. As stated before, the first companies had a clause[1] in their contracts whereby the parties insured were subject to calls for money in case of losses exceeding the amount of premiums paid in. The members of mutual organizations even today mutually agree to contribute their pro rata share to reimburse their fellow-members in case of fire. Later stock companies formed a corporation, and their charters required them to have a capital stock or fund, so that the corporation itself was liable and should pay and make good to the assured the amount of any loss by fire. Stock companies charge a premium for each risk written, the premium based on the hazard of the risk. When the assured pays this premium he is released from all further responsibility as far as the losses of the company are concerned. In Germany, Denmark, Switzerland, and other European countries insurance is conducted by the government or by various municipalities. In Germany and Switzerland today the government carries on an extensive insurance business. In these cases the assured are not reimbursed with money, but the government or municipality repairs or replaces the building.

During the French Revolution every fire insurance company of France failed. The first stock fire insurance company organized after the Revolution was in 1808, during the reign of the great Napoleon.

The first incorporated stock company in the United States was organized in 1794. In 1835 there were twenty-six local stock companies in New York and several in other states. There were also a number of mutual companies doing a purely local business. In December, 1835, there occurred a great conflagration in New York city, destroying property valued at over $20,000,000. This fire bankrupted twenty-three companies of New York, besides several companies of other states. This misfortune had a serious effect on insurance companies for several years. In 1845 another conflagration occurred in New York which ruined the mutual insurance companies doing business in that state, and also a great proportion of the new stock companies. Other conflagrations in Pittsburg, Philadelphia, and St. Louis demoralized the insurance business to a great extent. However, in 1853, sixty-five stock companies and seventy-four mutuals were again writing business in New York. Twenty-two stock companies in other states and several mutuals were writing considerable business throughout the United States. Then came on the Civil War and the $10,000,000 conflagration in 1866 at Portland, Maine, which again crippled the companies then in existence. So apparent was the necessity of fire insurance to the business world that between the years 1866 and 1870 nearly four hundred charters were taken out by fire insurance companies. Then in October, 1871, came the great Chicago fire, which burned constantly for three days and destroyed property valued at about $150,000,000. Again sixty-eight insurance companies were wrecked. Insurance companies incurred losses amounting to $91,300,000, of which they were able to pay but $50,000,000. Twenty-two Illinois companies were ruined by this conflagration. This taught the insurance corporations the unwisdom of insuring a number of risks in one locality. Today even the strongest insurance companies limit the amount of insurance they will carry on any one building or in any one block, and use great care in distributing risks over a large area.

The insurance business throughout the country was still in a critical condition when one year later occurred the disastrous Boston conflagration, which caused insurance losses of $56,000,000 more. Fifty companies were ruined by this fire, twenty of them being Massachusetts companies. These lessons, taught at a fearful cost, induced insurance companies to take every precaution to guard against similar experiences so that our more recent Baltimore, Bangor, Chelsea, and San Francisco conflagrations did not so seriously affect the underwriting business of the United States. The fire insurance business of today is conducted on such a safe, solid and substantial basis that a conflagration more destructive than the great Chicago fire would not demoralize the fire insurance business. Fire insurance companies carry greater liabilities than any other class of organized capital in the world.

QUESTIONS.

How old is the principle of insurance? Was incendiarism always considered a grievous crime? When was London destroyed by fire? What important branch of business was founded shortly after this fire? What properties did the first insurance companies insure? How did they make their rates and adjust their losses? Did they find it was also necessary to insure the contents of buildings and did they begin to insure them? When was the oldest insurance company in existence in England today organized? Were the first organized companies stock companies or mutual companies? How do mutual companies collect money to pay their losses? How do stock companies have money to pay theirs? In what countries does the government conduct an insurance business? Did the French Revolution work a hardship on insurance companies? When was the first stock company organized in the United States? Give a history of the insurance business and its first reverses in this country. Why are insurance companies careful not to write too large a policy on any one building or block?

LESSON 7.

Fire Insurance Rates.

In naming the price a certain amount of insurance will cost on a particular piece of property two hazards or dangers are taken into consideration: the physical hazard and the moral hazard. The physical hazard is apparent to the eye; the nature of the property and its surroundings disclose this hazard at once. The moral hazard is hidden; it lies in the character of the assured; his business methods, his habits, and his honesty or lack of honesty.

Lightning and conflagrations may be considered as physical hazards. While no one can foretell where lightning may strike, yet science and statistics point out where it is most likely to strike and why. A conflagration may occur through no particular fault of the specific property insured, but because of the exposures adjacent thereto; hence insurance companies take into consideration the exposure hazard as well as the immediate hazard of the property covered in the policy. For example, a frame building, exposed only to brick buildings on either side, would take a lower rate than if the buildings on either side were frame, and furthermore, if, instead of one frame building on either side there are several, the rate would be much higher, for instead of the possible danger of fire from one or two wood buildings there is constant danger that any one of a number of buildings might take fire and carry it to the property insured. Companies have a rate for buildings with no exposures; then they add five or ten cents per hundred to the rates, as the case may require, for each exposure located within five, ten, fifteen, etc., feet of the insured property. For example, we will say: the insurance on a frame house with no exposures cost 40 cents per each $100 of insurance. A brick building within five feet makes it cost 5 cents additional per $100; a frame building within five feet makes it cost 10 cents additional per $100; a brick building within ten feet makes it cost 10 cents additional per $100; a frame building within ten feet makes it cost 20 cents additional per $100.

Frame, shingle roof buildings take the highest building rates because wood is the greatest fire food in the world and fire devours it greedily. Shingle roofs are a terrible menace and should be considered as unhealthy on top or outside of a house as disease-breeding germs are inside of a house, for they not only breed but carry and spread fire.

The general outside condition of premises and property is also considered in rate making, and if individuals would keep their yards and alleys free from rubbish and inflammable material and keep their property in good repair they could reduce their rates or the cost of their insurance.

The occupancy of a building plays a most important part in the price of insurance, as does also the occupancy of the buildings adjoining or near it. Houses used for dwellings only have a regular or fixed rate according to the construction of the building and the fire hazards surrounding it.

Mercantile buildings are rated according to the hazard of the contents and construction of the building. A building occupied as a carpenter shop or paint factory is a much greater fire hazard than the same kind of a building occupied as a retail hardware or queensware store, because it contains many more fire dangers, and in case of fire originating in the carpenter shop or paint factory they are more liable to be totally destroyed on account of the inflammable contents.

The heating and lighting plants of both dwellings and business buildings play a part in rate making. Acetylene and gasoline lighting systems being much more dangerous than gas or electric lighting, buildings where no gasoline or inflammable materials are kept do not have as high a rate as buildings where they are stored. Homes or buildings equipped with good fire-extinguishers should have a lower rate than like buildings that do not have this protection. Mercantile risks equipped with approved automatic sprinklers that will discover a fire in its incipiency and put it out, at the same time sounding an alarm to the nearest fire department, take a much lower rate than similar buildings that are not so protected.

The fire protection of a city is also taken into consideration when fixing the cost of insurance. A town with good, high water pressure facilities, and well-equipped fire departments can obtain insurance at lower rates on the different classes of risks than can a town where the water supply and fire departments are inadequate or do not exist at all.

On the moral hazard the rate is hard to make. If the applicant for insurance is a careless, reckless person who leaves matches lying carelessly around, does not put a metal protection under his stove, does not properly and regularly clean out stovepipes and flues, disposes of ashes in unsafe places, throws lighted cigar stubs in waste baskets, or is guilty of many other careless, dangerous habits, he should be charged the highest possible rate. Unfortunately the insurance company selling him the insurance does not, as a rule, know of his careless habits, and he obtains insurance at the same price his more careful neighbor pays. Overinsurance is probably the greatest of all evils in connection with the moral hazard. The prospect of a fire being a financial profit is a strong incentive to commit arson. All property should be insured in such a way that a fire could not possibly be a financial benefit, but, on the contrary, every fire should be a real misfortune to the assured, as it is to the nation generally, and should be so considered. After a fire, if a thorough investigation is made, it can be sometimes ascertained if the insurance was greater than the value of the property, or if, on account of business conditions, the easiest way to dispose of a stock of goods that were shopworn or out of style was to burn it and collect the insurance.

The moral hazard is buried deep in the character of the assured. Years when business is usually depressed have been years when fires increased. It is a notable fact that years when some certain business was unprofitable more fires than usual would occur in that particular class of risks. The lack of interest in preserving property causes fires as well as the real desire to destroy for gain. Many buildings burn because there is no financial incentive to preserve them. Condemned buildings, elevators that are not used, summer hotels, factories whose products have gone out of style, old-fashioned dwellings where new ones are desired, mills where water power is no longer available; in fact, any property not yielding a profitable income is a dangerous risk from a moral standpoint. Even if the assured would not be guilty of arson, his indifference as to whether his property burns or not, knowing he has it well insured, makes him criminally careless.

The moral hazard of property is not always with the owner or assured. Often neighbors object to, and seek to destroy, undesirable property, as slaughter houses, fertilizing plants, hospitals, dance halls, poolrooms, and saloons. Ill-will and spite create a moral hazard. You can readily understand how it is impossible for insurance companies to charge correctly when the moral hazard is an unknown quantity. These hazards can not be estimated or charged for, as they can not be foreseen. The loss from this cause, however, is so great it must imperceptibly enter into the basis upon which rates are fixed or priced.

There are over one hundred different classes of risks, each taking a different rate. Even these are analyzed and divided until the insurance companies have a most intricate rating schedule. Of course, the cost of conducting the business, every salary paid employees, rent, commissions paid agents, cost of adjusting and settling losses; in fact, every item of expense incurred in carrying on the business, must enter into the price people must pay for fire protection. A life insurance company bases its rates on the age of applicants. For instance, every man or woman thirty years of age takes the same rate, no matter where they may live. In the fire insurance world no two buildings on account of age or similarity of construction would take the same rate, because their different locations and surroundings create different hazards. The very nature of a fire risk changes frequently, if not entirely, yet in some particular way which would also change the rate according to the increase or decrease of danger from fire. Fire insurance has no equally balanced mortality tables or their equivalent. The average annual fire loss suffered from any one risk enters into the rate on that particular kind of risk; for example, the average annual income for, say, ten years, from premiums on dwelling houses less the average annual loss for a like period, would be the basis upon which the rate is made for this class of risk; so in like manner would mercantile buildings, factories, etc., be rated. This brings us again face to face with the ever-important fact: **if we would reduce our fire insurance rates we** MUST FIRST REDUCE OUR FIRE LOSSES. No matter how you figure or reason it, this one fact remains evident; that every person carrying fire insurance contributes his pro rata share toward paying the fire losses of the nation. If the losses are great he must pay much; if they are small he pays but little. Insurance companies, in order to pay their losses, must charge adequate rates or premiums. The very security of a company depends upon its collecting sufficient funds to meet its liabilities.

It is almost incomprehensible, but nevertheless true, that, despite all these different conditions upon which rates must be apportioned, that fire insurance companies have a schedule by which they are able to charge reasonably equitable rates for each different kind of risk.

QUESTIONS.

What two important hazards are taken into consideration in making insurance rates? Is the physical hazard easier to discern than the moral hazard? Why? Name some physical hazards that are taken into consideration in fixing the selling price of insurance. Explain the internal and external hazard of a building. What part does fire protection and fire equipment play in rate making? Name some moral hazards that affect the cost of insurance. Is overinsurance dangerous? Why? Are there many different classes of risks? Is it difficult to make an equitable rating schedule? Why? What all-important fact ever faces us in the matter of reducing the cost of insurance? What is the inevitable way fire rates must be reduced?

LESSON 8.

New York Standard Fire Policy.

No. 33660

Amount, $1,000.00 Rate $0.40 Premium, $4.00

.... Insurance Company of ....

Established......

In consideration of the stipulations herein named and of Four and 00-100 Dollars Premium

Does insure John Jones for the term of One Year from the 18th day of September, 1912, at noon, to the 18th day of September, 1913, at noon, against all direct loss or damage by fire, except as hereinafter provided, to an amount not exceeding One Thousand and 00-100 Dollars, to the following described property while located and contained as described herein and not elsewhere, to-wit:

Household Furniture Form.

$1,000.00 on household and kitchen furniture of every description, useful or ornamental, bedding, family wearing apparel and materials for same and in process of making, watches and jewelry in use, plate and plated ware, piano, stool and cover, and other musical instruments, typewriters, sewing machines, printed books and music, pictures, paintings, engravings, mirrors, and their frames, amateur photographic outfit, fishing tackle, firearms, billiard and pool tables, bicycles, trunks, canes and umbrellas, baby carriages, traveling equipments, fuel and family stores, all while contained in the two story frame building, with shingle roof, and its additions, adjoining and communicating, occupied for dwelling purposes, and situate 1521 Ord street, Lincoln, Nebraska.

This item is intended to cover property of like kind as above described belonging to assured's family, his guests and servants, unless such parties have insurance for their own account, but the contribution to guests and servants in case of loss is not to be made until after satisfying loss of assured and family. Loss, if any on this item, to be adjusted with and payable to assured named in this Policy.

This insurance is also intended to cover, under this item, garden tools and implements while contained in above building or any outbuilding on above described premises.

In case of loss or damage to printed books, musical instruments, statuary, bronzes, bric-a-brac, pictures and other works of art, no one subject shall be valued at more than the actual cost price of same.

Permission to make alterations and repairs without prejudice to this policy.

Permission given to use natural gas for fuel, and kerosene, gas and electricity for lighting.

Standard Lightning Clause.

This policy shall cover any direct loss or damage caused by Lightning (meaning thereby the commonly accepted use of the term Lightning, and in no case to include loss or damage by cyclone, tornado or windstorm), not exceeding the sum insured, nor the interest of the insured in the property, and subject in all other respects to the terms and conditions of this policy. Provided, however, if there shall be any other insurance on said property, this Company shall be liable only pro rata with such other insurance for any direct loss by Lightning, whether such other insurance be against direct loss by Lightning or not.

Gasoline Stove Permit.

Permission is hereby given for the using of a gasoline stove; the reservoir to be filled by daylight only and when the stove is not in use. Warranted by the assured that no artificial light be permitted in the room when the reservoir is being filled, and no gasoline, except that contained in said reservoir, shall be kept within the building, and no more than five gallons in a tight and entirely closed metallic can, free from leak, on the premises adjacent thereto.

CAUTION—The danger of gasoline stoves is not so much in themselves as in the having the gasoline about. At ordinary temperature, gasoline **continually gives off inflammable vapor.** It is said that **one pint of gasoline will impregnate 200 cubic feet** of air and make it explosive, and it depends upon the proportions of air and vapor whether it becomes a burning gas or **destructive explosive. Beware of any leaks in cans and never forget how dangerous a material you are handling.** Never attempt to fill the reservoir while the above is burning, or if any other light is in the room. **A little carelessness may hazard your life as well as your property.**

Attached to and forming part of Policy No. 33660 of the......... Insurance Company.

Agency at Lincoln, Nebraska. ....Agent.

This Policy is made and accepted subject to the foregoing stipulations and conditions, and to the following stipulations and conditions printed on back hereof, which are hereby specially referred to and made a part of this Policy, together with such other provisions, agreements, or conditions as may be endorsed hereon or added hereto; and no officer, agent or other representative of this Company shall have power to waive any provision or condition of this Policy except such as by the terms of this Policy may be the subject of agreement endorsed hereon or added hereto; and to such provisions and conditions no officer, agent, or representative shall have such power or be deemed or held to have waived such provisions or conditions unless such waiver, if any, shall be written upon or attached hereto, nor shall any privilege or permission affecting the insurance under this Policy exist or be claimed by the insured unless so written or attached.

"Provisions required by law to be stated in this policy."—This Policy is in a stock corporation.

In Witness Whereof, this Company has executed and attested these presents this 18th day of September, 1912. This policy shall not be valid unless countersigned by the duly authorized Agent of the Company at Lincoln, Neb.

Lines 1 to 6:

This company shall not be liable beyond the actual cash value of the property at the time any loss or damage occurs, and the loss or damage shall be ascertained or estimated according to such actual cash value, with proper deduction for depreciation however caused, and shall in no event exceed what it would then cost the insured to repair or replace the same with material of like kind and quality; said ascertainment or estimate shall be made by the insured and this company, or, if they differ, then by appraisers, as hereinafter provided; and, the amount of loss or damage having been thus determined, the sum for which this company is liable pursuant to this policy shall be payable sixty days after due notice, ascertainment, estimate, and satisfactory proof of the loss have been received by this company in accordance with the terms of this policy. It shall be optional, however, with this company to take all, or part, of the articles at such ascertained or appraised value, and also to repair, rebuild, or replace the property lost or damaged with other of like kind and quality within a reasonable time on giving notice, within thirty days after the receipt of the proof herein required, of its intention so to do; but there can be no abandonment to this company of the property described.

Lines 7 to 10:

This entire policy shall be void if the insured has concealed or misrepresented, in writing or otherwise, any material fact or circumstance concerning this insurance or the subject thereof; or if the interest of the insured in the property be not truly stated herein; or in case any fraud or false swearing by the insured touching any matter relating to this insurance or the subject thereof, whether before or after a loss.

Lines 11 to 30:

This entire policy, unless otherwise provided by agreement indorsed hereon or added hereto, shall be void if the insured now has or shall hereafter make or procure any other contract of insurance, whether valid or not, on property covered in whole or in part by this policy; or if the subject of insurance be a manufacturing establishment and it be operated in whole or in part at night later than ten o'clock, or if it cease to be operated for more than ten consecutive days; or if the hazard be increased by any means within the control or knowledge of the insured; or if mechanics be employed in building, altering, or repairing the within described premises for more than fifteen days at any one time; or if the interest of the insured be other than unconditional and sole ownership; or if the subject of insurance be a building on ground not owned by the insured in fee-simple; or if the subject of insurance be personal property and be or become incumbered by a chattel mortgage; or if, with the knowledge of the insured, foreclosure proceedings be commenced or notice given of sale of any property covered by this policy by virtue of any mortgage or trust deed; or if any change, other than by the death of an insured, take place in the interest, title, or possession of the subject of insurance (except change of occupants without increase of hazard) whether by legal process or judgment or by voluntary act of the insured, or otherwise; or if this policy be assigned before a loss; or if illuminating gas or vapor be generated in the described building (or adjacent thereto) for use therein; or if (any usage or custom of trade or manufacture to the contrary notwithstanding there be kept, used, or allowed on the above described premises, benzine, benzole, dynamite, ether, fireworks, gasoline, greek fire, gunpowder, exceeding twenty-five pounds in quantity, naphtha, nitro-glycerine or other explosives, phosphorus, or petroleum or any of its products of greater inflammability than kerosene oil of the United States standard (which last may be used for lights and kept for sale according to law, but in quantities not exceeding five barrels, provided it be drawn and lamps filled by daylight or at a distance not less than ten feet from artificial light); or if a building herein described, whether intended for occupancy by owner or tenant, be or become vacant or unoccupied and so remain for ten days.

Lines 31 to 35:

This company shall not be liable for loss caused directly or indirectly by invasion, insurrection, riot, civil war or commotion, or miltary or usurped power, or by order of any civil authority; or by theft; or by neglect of the insured to use all reasonable means to save and preserve the property at and after a fire or when the property is endangered by fire in neighboring premises; or (unless fire ensues, and, in that event, for the damage by fire only) by explosion of any kind, or lightning; but liability for direct damage by lightning may be assumed by specific agreement hereon.

Lines 36 and 37:

If a building or any part thereof fall, except as the result of fire, all insurance by this policy on such building or its contents shall immediately cease.

Lines 38 to 44:

This company shall not be liable for loss to accounts, bills, currency, deeds, evidences of debt, money, notes, or securities; nor, unless liability is specifically assumed hereon, for loss to awnings, bullion, casts, curiosities, drawings, dies, implements, jewels, manuscripts, medals, models, patterns, pictures, scientific apparatus, signs, store or office furniture or fixtures, sculpture, tools, or property held on storage or for repairs; nor, beyond the actual value destroyed by fire, for loss occasioned by ordinance or law regulating construction or repair of buildings, or by interruption of business, manufacturing processes, or otherwise; nor for any greater proportion of the value of plate glass, frescoes, and decorations than that which this policy shall bear to the whole insurance on the building described.

Lines 45 to 46:

If an application, survey, plan, or description of property be referred to in this policy it shall be a part of this contract and a warranty by the insured.

Lines 47 and 48:

In any matter relating to this insurance no person, unless duly authorized in writing, shall be deemed the agent of this company.

Lines 49 and 50:

This policy may by a renewal be continued under the original stipulations, in consideration of premium for the renewed term, provided that any increase of hazard must be made known to this company at the time of renewal, or this policy shall be void.

Lines 51 to 55:

This policy shall be cancelled at any time at the request of the insured; or by the company by giving five days' notice of such cancellation. If this policy shall be cancelled as hereinbefore provided, or become void or cease, the premium having been actually paid, the unearned portion shall be returned on surrender of this policy or last renewal, this company retaining the customary short rate; except that when this policy is cancelled by this company by giving notice it shall retain only the pro rata premium.

Lines 56 to 59:

If, with the consent of this company, an interest under this policy shall exist in favor of a mortgagee or of any person or corporation having an interest in the subject of insurance other than the interest of the insured as described herein, the conditions hereinbefore contained shall apply in the manner expressed in such provisions and conditions of insurance relating to such interest as shall be written upon, attached, or appended hereto.

Lines 60 to 66:

If property covered by this policy is so endangered by fire as to require removal to a place of safety, and is so removed, that part of this policy in excess of its proportion of any loss and of the value of property remaining in the original location, shall, for the ensuing five days only, cover the property so removed in the new location; if removed to more than one location, such excess of this policy shall cover therein for such five days in the proportion that the value in any one such new location bears to the value in all such new locations; but this company shall not in any case of removal, whether to one or more locations, be liable beyond the proportion that the amount hereby insured shall bear to the total insurance on the whole property at the time of fire, whether the same cover in new location or not.

Lines 67 to 80:

If fire occur the insured shall give immediate notice of any loss thereby in writing to this company, protect the property from further damage, forthwith separate the damaged and undamaged personal property, put it in the best possible order, make a complete inventory of the same, stating the quantity and cost of each article and the amount claimed thereon; and, within sixty days after the fire, unless such time is extended in writing by this company, shall render a statement to this company, signed and sworn to by said insured, stating the knowledge and belief of the insured as to the time and origin of the fire; the interest of the insured and of all others in the property; the cash value of each item thereof and the amount of loss thereon; all incumbrances thereon; all other insurance, whether valid or not, covering any of said property; and a copy of all the descriptions and schedules in all policies; any changes in the title, use, occupation, location, possession, or exposures of said property since the issuing of this policy; by whom and for what purpose any building herein described and the several parts thereof were occupied at the time of fire; and shall furnish, if required, verified plans and specifications of any building, fixtures, or machinery destroyed or damaged; and shall also, if required, furnish a certificate of the magistrate or notary public (not interested in the claim as a creditor or otherwise, nor related to the insured) living nearest the place of fire, stating that he has examined the circumstances and believes the insured has honestly sustained loss to the amount that such magistrate or notary public shall certify.

Lines 81 to 85:

The insured, as often as required, shall exhibit to any person designated by this company all that remains of any property herein described, and submit to examinations under oath by any person named by this company, and subscribe the same; and, as often as required, shall produce for examination all books of account, bills, invoices, and other vouchers, or certified copies thereof if originals be lost, at such reasonable place as may be designated by this company or its representative, and shall permit extracts and copies thereof to be made.

Lines 86 to 91:

In the event of disagreement as to the amount of loss the same shall, as above provided, be ascertained by two competent and disinterested appraisers, the insured and this company each selecting one, and the two so chosen shall first select a competent and disinterested umpire; the appraisers together shall then estimate and appraise the loss, stating separately sound value and damage, and, failing to agree, shall submit their differences to the umpire; and the award in writing of any two shall determine the amount of such loss; the parties thereto shall pay the appraiser respectively selected by them and shall bear equally the expenses of the appraisal and umpire.

Lines 92 to 95:

This company shall not be held to have waived any provision or condition of this policy or any forfeiture thereof by any requirement, act, or proceeding on its part relating to the appraisal or to any examination herein provided for; and the loss shall not become payable until sixty days after the notice, ascertainment, estimate, and satisfactory proof of the loss herein required have been received by this company, including an award by appraisers when appraisal has been required.

Lines 96 to 101:

This company shall not be liable under this policy for a greater proportion of any loss on the described property, or for loss by and expense of removal from premises endangered by fire, than the amount hereby insured shall bear to the whole insurance, whether valid or not, or by solvent or insolvent insurers, covering such property, and the extent of the application of the insurance under this policy or of the contribution to be made by this company in case of loss, may be provided for by agreement or condition written hereon or attached or appended hereto. Liability for re-insurance shall be as specifically agreed hereon.

Lines 102 to 105:

If this company shall claim that the fire was caused by the act or neglect of any person or corporation, private or municipal, this company shall, on payment of the loss, be subrogated to the extent of such payment to all right of recovery by the insured for the loss resulting therefrom, and such right shall be assigned to this company by the insured on receiving such payment.

Lines 106 and 107:

No suit or action on this policy, for the recovery of any claim, shall be sustainable in any court of law or equity until after full compliance by the insured with all the foregoing requirements, nor unless commenced within twelve months next after the fire.

Lines 108 and 109:

Wherever in this policy the word "insured" occurs, it shall be held to include the legal representative of the insured, and wherever the word "loss" occurs, it shall be deemed the equivalent of "loss or damage."

Lines 110 to 112:

If this policy be made by a mutual or other company having special regulations lawfully applicable to its organization, membership, policies or contracts of insurance, such regulations shall apply to and form a part of this policy as the same may be written or printed upon, attached, or appended hereto.

Assignment of Interest by Insured.

The interest of .... as owner of property covered by this policy is hereby assigned to ...., subject to the consent of the .... Insurance Company, of ....

....

(Signature of the Insured)

Dated, ...

Note.—To secure mortgagees, if desired, the policy shall be made payable on its face to such mortgagee as follows: Loss, if any, payable to John Doe, mortgagee.

Consent by Company to Assignment of Interest.

The .... Insurance Company, of ...., hereby consent that the interest of......... as owner of the property covered by this policy be assigned to.............

....

(Signature for Company)

Dated, ...

Form for Removal.

Permission is hereby granted to remove the property insured by this policy to the .... situate .... and this policy is hereby made to cover the same property in new locality, all liability in former locality to cease from this date.

Rate increased to..........% Additional Premium $..........

Rate reduced to..........% Return Premium $..........

..............................Agent.

Dated, ..., 191....

LESSON 9.

Insurance Policies.

In a former lesson you have been told how rates for insurance are made. We will now proceed to analyze and explain an insurance policy. Every policyholder should read and understand his policy. It is a contract which he enters into with a business firm, and he should know what his obligations are under the contract and what obligations the firm selling him the contract are under. A great many lawsuits and misunderstandings could be avoided if every policyholder would carefully read and thoroughly understand his policy.

You will note the policy first states the amount of insurance for which it is written, the rate upon which the price is based, and the total price or premium to be paid by the assured. If a person desires to insure a dwelling for $1,000, and if the schedule rate is 40 cents per every hundred dollars of insurance carried, the premium would be $4, and this is the amount the assured would have to pay the insurance company for purchasing $1,000 worth of insurance for one year.

You will also note that the policy not only says "in consideration of a certain premium, but also "in consideration of the stipulations herein named" does it insure the property. These stipulations are a very important part of the contract. After describing the property insured, whether dwelling or contents, the policy goes on to name the stipulations as follows:

Lines 1 to 6 of the policy provide for the settlement of loss in case of fire. This paragraph should be carefully studied and each provision understood by the policyholder. The language is simple and plain. The company is not liable for more than the actual cash value of the property destroyed by fire; the insurance company will pay only what it would actually cost to replace the property. It provides for disinterested appraisers in case the company and assured can not agree. The company reserves the option to pay for the loss in cash or to replace the property destroyed. The company must pay the loss within sixty days after a fire occurs or give the assured notice within thirty days that they will replace the property burned.

Lines 7 to 10 provide for the forfeiture of the insurance by misrepresented or fraudulent acts or statements on the part of the assured. The company must protect itself against dishonest applicants for insurance in this manner.

Lines 11 to 30 provide that the policy is forfeited if the assured makes his property more hazardous after he receives his insurance than it was when he purchased it. A person has no right to insure his property under ordinary circumstances, and when it possesses no particular fire hazard, and then after he has it insured store combustible and explosive materials in it. If, when he insures the property, it is lighted by lamps he shall not thereafter install an acetylene gas plant on the premises until he notifies the insurance company and receives their permission to do so. He must not give a mortgage to any one on the insured property unless he has permission to do so from the company.

Lines 31 to 35 exempt the company from liability in case of war, insurrection, or riots. These lines also require that in case of fire the insured must use all means within his power to save and preserve his property. Loss by lightning is always provided for in insurance policies written for dwellings.

Lines 36 and 37 provide that if a building should fall as the result of a storm, undermined foundation, etc., the insurance immediately ceases.

Lines 38 to 44 provide that money, bonds, and securities are not insured by the policy. There would be such an incentive for fraud in insuring articles of no inherent value but merely valuable on account of sentiment, antiquity, memory, etc., that it would not be wise for any company to insure them. If money was insured it would be easy for a dishonest person to grossly misrepresent the amount.

Lines 45 and 46 refer to specific articles or properties itemized in the policy. For instance, an insurance company will not insure a certain book contained in a library insured under the general household goods form. The book would have to be named or itemized and a certain specific value placed upon it; or the same rule would apply in insuring valuable pictures in a dwelling.

QUESTIONS.

Is it important that every one carrying fire insurance should read and understand his policy? Why? What does the first part of the policy consist of? What do lines 1 to 7 consist of? Explain them. Explain lines 7 to 10, 11 to 30, 31 to 35, 36 and 37, 38 to 44, 45 and 46.

LESSON 10.

Policies—Continued.

Lines 47 and 48 are very important parts of the contract. They are inserted for the protection of both the company and the assured. No insurance agent has a right to promise or make any terms, grant any dispensations or privileges other than those named in the policy to the assured. Any and all agreements must be made in writing signed by the AUTHORIZED agent of the company before they are valid. Many misunderstandings and lawsuits occur becouse of misrepresentations and verbal promises made by agents.

Lines 49 and 50 merely inform the assured that the policy may be renewed, by a renewal receipt, under the original stipulations, provided the hazard has not changed; if it has it must be made known to the company or the contract would be invalid.

Lines 51 to 55 provide that the insured may cancel his insurance at any time he wishes, and the company will release him from all obligations under the contract, and return to him the unearned premium (according to the regular short-rate tables). These lines also provide that the company may cancel the insurance on the risk, provided they give the assured five days' notice, so that he may obtain other insurance if he wishes. When the policy is cancelled by the company it shall retain only the pro rata premium.

Lines 56 to 59 permit the assured to assign his policy in favor of a mortgagee provided he has the consent of the company to such assignment in accordance with the conditions hereinbefore contained.

Lines 60 to 66 permit, or rather, induce, the assured, in case of a partial loss by fire, to remove the rescued part of his belongings to a place of safety, and provide that the insurance shall apply on the removed goods proportionately as the value of the insured goods apply to the total insurance policy.

Lines 67 to 80 instruct the insured how to proceed toward settling his loss with the insurance company after a fire. It is very important that all policyholders read this paragraph.

Lines 81 to 95 provide for the settlement of losses. The company has sixty days after notification of fire and after satisfactory proofs of loss have been made to pay a loss.

Lines 96 to 101 are to protect the insurance company from having to pay excessive insurance. When several insurance companies carry insurance on one risk, in case of fire they are each liable for their proportionate share; for example, if there is a total insurance carried on one risk of $3,000, and three companies are on the risk, each carrying $1,000, in case of fire each company would be liable for one-third of the total loss. Re-insurance is where one company by contract assumes the liability of another company. This applies principally to commercial policies, and we will not go into details concerning it here.

Lines 102 to 105 are to prevent the assured from collecting excessive indemnity, and at the same time to make careless and negligent persons responsible for losses that occur through their fault. Even though my neighbor carries insurance on his property I have no right to destroy it through criminal carelessness, and if I do I should be held responsible and be compelled to reimburse him. As he would have no right to collect from both the insurance company and from me, he should either relieve the insurance company from liability, and proceed to collect his loss from me, or if he collects from the insurance company they should have the right to compel me to indemnify them for the amount they had to pay my neighbor.

Lines 106 and 107 provide that the assured shall comply with all the requirements above stipulated in case of loss, and say he may start suit for non-payment of claim not later than twelve months after date of fire.

Lines 108 and 109 are explanatory, and lines 110 to 112 apply to mutual companies.

The assured is not permitted to sell or assign his interests in his insurance policy without the written consent of the company. He invalidates his policy if he removes the goods from the building described in his insurance policy to any other building without notifying the company and having them issue him a "removal permit."

This is only a brief analysis of the New York Standard Fire Insurance Policy. Pupils can spend considerable time in studying the policy carefully.

There are other clauses, permits, and forms that grant certain privileges or place certain obligations upon the policyholder, and he should read and understand every form attached to the contract.

The reduced rate average clause is a most common one attached to mercantile policies.

Reduced Rate Average Clause.

In consideration of the rate at (and or form under) which this policy is written, it is expressly stipulated and made a condition of this contract, that this company shall be held liable for no greater proportion of any loss than the amount hereby insured bears to ....per cent of the actual cash value of the property described herein at the time when such loss shall happen, nor for more than the proportion which this policy bears to the total insurance thereon. If this policy be divided into two or more items, the foregoing conditions shall apply to each item separately.

Attached to and made a part of policy No...........of the..... Insurance Company, of ...., issued at its........... agency.

.......................Agent.

We can not go into further details here regarding the different clauses that are sometimes attached to insurance policies, but pupils, with the assistance of their teacher, can obtain and carefully study these different forms.

QUESTIONS.

Explain lines 47 and 48, 49 and 50, 51 to 55, 56 to 59, 67 to 80, 81 to 95, 96 to 101, 102 to 105, 106 and 107. Can the assured, under any circumstances, make any changes in his policy without notifying the company? Can he remove his insured property from the place where they were when insured to another place without notifying the company? Would it invalidate the policy if he did not notify the company and obtain a "removal permit" from them? What is the reduced rate average clause?

LESSON 11.

Mutual Insurance Companies.

A mutual insurance company usually limits the amount of insurance it will carry on any one risk in its regular policy form, that is, its bylaws prohibit a company from carrying insurance above a stipulated amount on any one risk.

As mutual insurance companies have no standard policy in universal use, we can not give one here for an example. Most of their policies read about the same as stock companies' policies, except as to rates and payment of losses. The following clauses taken from a mutual insurance company's policy will give an idea as to how property is rated and assessments made to pay losses:

"Losses Paid, Borrow Money, Rebuild or Repair.

"When a loss is adjusted it shall be paid within sixty days if sufficient funds are on hand, but if there are not sufficient funds on hand the board of directors shall make an assessment or borrow money sufficient to pay all indebtedness. The company reserves the right to rebuild or repair any building damaged, under the conditions of the policy.

"Assessments Must Be Paid.

"It shall be the duty of each member of the company to pay all assessments made upon him or her within thirty days after the date of assessment. If any member fail to pay his or her assessment within the time so specified, it shall cause their suspension from membership and his or her policy to lapse without any action on the part of the company. Should such suspended member wish to again become a member in good standing, he may do so by paying lapsed assessments, and when the same are received and approved by the secretary he will be reinstated. The company shall not, however, be liable for any loss the assured has sustained during the time said policy had lapsed by reason of non-payment of assessment, and the acceptance after a loss has occurred shall not thereby make the company liable for such loss.

"Fees.

"The fee for combined insurance shall be one-half of 1 per cent for all new applications and renewals, or 50 cents per $100 for fire and lightning, windstorm, and tornado, or 30 cents per $100 for fire and lightning, and 20 cents per $100 for cyclone, windstorm, and tornado. For additional insurance same as above; for transferring and reducing $1.

"Assessments.

"The basis of assessments in the fire department is as follows: A discount of 10 per cent will be allowed on all assessments in towns that have waterworks and fire departments when buildings are in reach of water main and an additional 10 per cent on all brick and stone buildings in all towns.

"Limit of Liability.

"No assessment shall be made upon a member for liability incurred prior to his or her membership. All members are excluded from any benefits of insurance during all times in which they may be in default of payment of any cash percentage, assessments, or agreed payments at the time agreed upon, and the acceptance of delinquent assessments, or other payments shall not make the company liable for any loss occurring during the time such payment was delinquent. When the funds of the company shall be insufficient to pay the losses and expenses and keep up the reserve fund, the board of directors shall make an assessment on all the members of the company in proportion to the amount of insurance they carry, and in proportion to the rate charged on the same as compared with other risks (due consideration being given for amounts already paid and to assured holding specific contract) for an amount sufficient to pay all losses and expenses and make good the reserve fund; provided the board of directors may establish and carry on a system of yearly assessments, and contracts of specific payments, as to them may seem advisable, based on the experience of the past and anticipating the reasonable losses and expenses of the future and sufficient to meet all such losses and expenses and to keep the reserve fund intact, but not exceeding the limitation herein fixed. No person shall be liable to the company, or to any other member of the company for losses and expenses except through the regular channel of an assessment, and specific contracts, and no assessment shall be made for any purpose, nor liability exist on the part of any member or policyholder, for any sum in excess of one-fourth of the cash percentage paid or 100 per cent of the board rate on the property at the time and for the term the policy was written, or more than stated in his contract of insurance.

"In case of excessive losses to such an extent that the assessment and payments as herein authorized and limited and including the reserve fund shall be insufficient to pay them in full, after the payment of expenses, then the fund remaining shall be pro rated on such losses and be paid and accepted in full satisfaction thereof.

"The rule of the company shall be to assess the members of the company on the anniversary of the policy. But the payment made at the time of entering the company shall take the place of the first year's assessment."

As a rule the rates charged by mutual companies are not as high as those charged by stock companies, but the mutual companies do only a limited business, in a restricted territory, and do not carry liabilities as great as the stock companies. As they have no capital stock in reserve, their policyholders are subject to assessments, and in case of heavy losses their assessments may by far exceed the rates charged by stock companies.

Mutual companies controlled by good, sound business men, who are judicious and careful in their policy-writing and ever guarding against the possibility of heavy losses in any one district, have flourished and prospered for many years.

The following clauses copied from a mutual insurance company policy would be most appropriate and fitting in every fire insurance policy issued, whether stock or mutual.

"Company Not Liable.

"This company will not be liable for loss or damage by fire that may occur under the following conditions, viz.: from the design of the insured, or from exposed light in barn or other building than house, or from ashes deposited in wooden vessel, or from stovepipes passing through wooden partitions or floors without being properly secured by metal ventilators, nor will the company be liable for damage by wind to metal chimneys or metal chimney tops.

"Prohibited Risks.

"This company will not insure any old dilapidated buildings; those covered with straw or thatched roofs; nor will this company insure any dwelling, church, schoolhouse where a fire is used for heating purposes, unless made safe with good brick flues, and all stove pipes must be made safe with metal thimbles where passing through partitions or floors."

We could add a long list of like restrictions to be put upon the assured with all due propriety, and that would go a long way toward making policyholders use more care and precaution regarding fire dangers. If these precautions were made compulsory upon the assured he would in time see the benefit of them in reduced fire losses, cheaper insurance rates, and preservation of our utilized resources.

Note to teacher.—Have your pupils name a list of avoidable fire dangers that insurance companies could itemize in their policies and for which they could refuse to be liable for payment of the insurance if a fire was caused by any one of the restricted causes.

QUESTIONS.

In what particular way does the mutual insurance company's policy differ from the stock company's policy? Tell how fees are collected. How are funds to pay losses obtained? What excellent clauses are contained in some mutual policies? Would it reduce fire losses if such restrictions were put in all policies? What are a number of fire dangers that it would be well if insurance companies could refuse liability under their policies if fire occurred because of them?

LESSON 12.

Fire Losses of the United States as Compared With European Countries.

The first stock fire insurance company organized after the Revolution was in 1818 during the reign of the great Napoleon.

Under the Napoleonic Code every individual in whose premises a fire originates is liable for loss or damage that may happen to others if the fire was caused by carelessness or negligence. In France it is not left to insurance companies to prove that the fault was that of the assured, but the burden of proof is on the policyholder, and he must prove that the fire originated through no fault of his. Hence a tenant is thrice careful: first, for his own sake not to have his property destroyed by fire; second, because he may have to indemnify his landlord; and, third, because he is liable for any damage occurring to his neighbors through fires originating in his premises.

Article 1382 of the Napoleonic Code reads as follows: "Every person is responsible and liable for any acts of his by which any other person has or may have sustained any loss, damage, or injury."

"Article 1383. Every person is responsible for any loss, damage, or injury caused by his own act, carelessness, or neglect." This responsibility as it relates to fires is called in France the recours des voisins, or neighbors' risk. It is universal and applies to landlord and tenant alike. As applied to fires these articles mean that if a fire starts in your premises through gross carelessness or neglect you are liable for any damage the fire may do your neighbor, or if a fire originates on your neighbor's premises through carelessness or neglect he is liable to you. There is no limit to this liability, which may extend many blocks in case of a conflagration. The only point in the application of the law by which such an offender may escape is that the burden of proof lies with the neighbor making claim. The latter must be able to prove, before he can recover damages, that the fire was directly due to gross carelessness.

Article 1733 of the same Napoleonic Code reads: "The tenant is responsible for a fire on his premises unless he can prove that the fire was caused by something beyond his control, by some fault in building, or that the fire was communicated by a neighboring building."

Article 1734. "If there are a number of tenants, all are alike responsible unless they can prove that the fire caught in the apartment occupied by one of them, in which case he alone is responsible, or unless some of them can prove that the fire did not begin in their apartment, in which case they are not responsible."

Per Capita Fire Losses for 1907 in the United States.

(United States Geological Survey.)

Geographic Division—	Fire Loss Per Capita
North Atlantic—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania	$2 50
South Atlantic—Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida	2 19
North Central—Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas	2 37
South Central—Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas	3 66

Western—Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, California.....	2 65

Fire Losses in Six European Countries.

Country—	Years.	Annual Average.	Population, 1901.	Loss Per Capita.
Austria	1898-1902	$7,601,389	26,150,597	$0 29
Denmark	1901	660,924	2,588,919	26
France	1900-1904	11,699,275	38,595,500	30
Germany	1902	27,655,600	56,367,178	49
Italy	1901-1904	4,112,725	32,449,754	12
Switzerland	1901-1903	999,364	3,325,023,	30

Average loss per capita, 33 cents.

The following is an extract from a leading magazine editorial:

"The Federal Government began, in 1907, an investigation, through our consulates, into fire conditions in Europe. Almost every consular reply stated, in effect, that our fire departments and fire-fighting methods are vastly superior, but that fire losses in European countries are, of course, much smaller. For example, in 1910 we find that thirteen of the largest cities of Germany, with a combined population of 5,616,822, suffered a fire loss of $1,067,205. Five American cities, Chicago, Philadelphia, Boston, St. Louis, and San Francisco, with a combined population one hundred thousand less, 5,510,897, suffered a fire loss, in the same year, of $14,250,183. New York with a population of 4,766,883, added its $8,591,831—about five times the loss for London and nine times that of Paris.

"Between 1901 and 1910 it cost every man, woman, and child in the United States and Canada an average of $2.39 a year for fire. The European was paying thirty-three cents; the German, for his part, only nineteen. Between 1900 and 1909 our population increased 73 per cent; our fire loss increased 134 per cent. What is more sinister, the number of our fires per capita is steadily increasing. The puzzled foreigner may be pardoned for finding it hard to decide whether we are a nation of children playing with matches or a nation of incendiaries. We now burn up every year half the value of the buildings we erect in the same year.

"But the loss of property is not the worst. Figures gathered by the United States Geological Survey for 1907, and drawn from a little more than a third of our total population, give a loss of life from fire of 1,449, and a list of injured of 5,654. Mr. Charles Whiting Baker, editor of the Engineering News, has reduced this to a gruesome statistical image. "The buildings consumed," he writes, "would line both sides of a street extending from New York to Chicago. A person journeying along the street of desolation would pass in every thousand feet a ruin from which an injured person was taken. At every three-quarters of a mile in this journey he would encounter the charred remains of a human being who had been burned to death." Since 1903 five fires alone—the Collingwood schoolhouse, the Boyertown moving-picture show, the Iroquois Theater in Chicago, and the steamer General Slocum, and the Asch Building in New York—give a total of more than 2,100 deaths"

Probably because in Europe the man who has a fire on his premises, instead of receiving sympathy from his neighbors, is looked upon as a public offender unless he can prove the fire was not caused by carelessness or neglect, the fire losses in Europe are about 33 cents per capita. In the United States, where no such stringent laws exist and where the man who has a fire, even though it is caused by carelessness, is pitied and not censured, the losses are $2.33 per capita. It is commendable to be charitable, but there is no charity in condoning criminal carelessness. Do not tolerate dangerous fire conditions to exist; report to the authorities having jurisdiction over these matters if the property owners or offenders will not remove them. If the fire losses of this country can not be reduced by the willing co-operation of its citizens, lawmakers will have to enact laws making it compulsory to protect and conserve our possessions from fire.

Students Can Do Excellent Work in Reducing Fire Losses.

Students can do an excellent, commendable work along these fire prevention lines. Organize your fire prevention society; once a month is often enough to meet, and every month your home and yards should be inspected. You are all old enough to understand these home fire dangers and to know how to correct them. Whether you live in a large city or a small one fire dangers are present and need abolishing. Fire is no respecter of persons. It enters the rich man's home as stealthily or as boldly as it does the poor man's.

Fire losses destroy annually property worth about $252,000,000. It costs the people through insurance losses $150,000,000, the maintenance of our fire departments costs another $150,000,000, and if we add to this the loss to the merchant on account of suspension of trade, the loss easily reaches about a half billion of dollars, or as much as it costs to maintain our government, and more than our country gives forth in mined mineral wealth each year.

If your parents or friends own stores or business houses call their attention to any dangers you may discover. Do not be officious or arrogant; be modest and quiet and earnest in your manner at home or whereever you may be; you will accomplish more and your suggestions will receive greater consideration. You will soon leave school to go out into the world on your devious ways; your success or failure in the world will depend, first, on your own natural character, personality and ability, and, second, on your education and opportunity. Use both your natural and acquired ability for your own advancement and for the advancement and progress of your fellow man.

You can not fail to understand that your work along fire prevention lines is a necessary and worthy task; you can not fail to comprehend that it is the conserving of life and property from its most flagrant cause of destruction. You can not refuse to cooperate and lend assistance in a movement to abolish an evil as deadly as disease, as destructive as war, and more prevalent than plague.

QUESTIONS.

When was the first stock fire insurance company organized in France after the Revolution? What articles in the Napoleonic Code tend to make the fire losses in France very small? What are the average annual fire losses per capita in the North Atlantic portion of our country? In the South Atlantic? North Central? South Central? Western? What are the average annual fire losses per capita in Austria? Denmark? France? Germany? Italy? Switzerland? What did the Federal Government investigation of 1907 disclose regarding the percentage of fire losses in large American and European cities? How much is the annual per capita fire loss in Germany? What is the average death loss from fire as given by the United States Geological Survey? What can students do to help reduce the national fire loss? What is a total estimate of the annual fire loss? How do we arrive at this estimate? What should ever be your manner at home or in the business world? Upon what will your success or failure depend? Is it important and necessary that you assist in decreasing fire losses?

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